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A WEEKLY

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Quand le bâtiment va, tout va.—PROVERB.

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FORTHCOMING EVENTS.

Monday, January 10.

Architectural Association : Special General Meeting at 6 P.M.
Surveyors' Institution : Paper entitled "Some Notes on Reinforced Concrete," by Mr. R. M. Kearns, F.S.I., at 5 P.M.

Tuesday, January 11.

Illuminating Engineering Society : Discussion on "Some Principles in Industrial Lighting," to be opened at the House of the Royal Society of Arts," by Mr. J. S. Dow, at 8 P.M.

Thursday, January 13.

Society of Architects : Annual General Meeting at 5 P.M.
British Museum : University Extension Lecture XIII. on "Roman Architecture (B.C. 100—A.D. 300)," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Friday, January 14.

Town-Planning Institute : Paper entitled "Open Spaces and Town-Planning Schemes," by Mr. Lawrence W. Chubb, at 6 P.M.

WHITHER?

At the beginning of a New Year it is natural to look forward and usually, however dark the present may be, with feelings of hopefulness. Hence if it may scarcely seem appropriate to wish our readers a happy and prosperous New Year we can at least feel completely justified in desiring for them a new year happier, brighter, and more prosperous than the last. Naturally, our chief concern at this time is the possibility or probability of peace after decisive victory occurring within this new year. We now know that nothing short of our fullest endeavour will suffice to bring any decisive victory at all, much less a speedy victory, that anything less than a speedy victory will be indecisive, that the cost of the war in men and money is so enormous that a delayed victory, by the slow processes of attrition and economic strangulation of the enemy will not be worth having.

We all of us have some influence with the Government, even if it be no more than that of a constituent's letter to his parliamentary representative, and we must all of us use every ounce of that influence to push forward our present dilatory rulers to immediate, energetic action. The present wastage of men, we are told, is fifteen per cent. every month. It would be cheaper of human life to spend fifty per cent. in one very early month and smash the enemy. Instead of always doing too little and too late as during the past year, our Government must be pushed into doing just a bit more than the bare necessary, and a little sooner than the last moment.

The building trade wants peace quickly. We have an immense amount of arrears to overtake in building of every description, in housing first and foremost and most urgently, in provision of buildings for public utility in many directions. We have no wish to see any great extension of monuments to our fallen heroes. The roll of honour is too long already, and we want it closed as speedily as possible.

It is even now time to be thinking how the great number of memorials that will be required and provided may be artistically worthy successors of those of our forefathers, of the fourteenth-century tomb of Aymer de Valence, of Torregiani's effigy of Margaret, Countess of Beaufort, of England's first admirals, the Alards at Winchelsea, of the Beauchamps at Warwick, of Sir Anthony Browne at Battle, and many others. We are rejoiced to know that the Lord Mayor of London has consented, at the request of the Civic Arts Association, to preside over a meeting at the Mansion House on January 28, to insist upon the importance of some consideration or regulation of war memorials if fitting excellence of work and design is to be secured. The object of this meeting is praiseworthy, the realisation of its ideal of considerable difficulty. There must be no attempt to get the control into the hands of a clique or the followers of some particular fashion, still less into those of a group financially interested, whether as designers or executants.

The question of war memorials suggests speculation as to whether we shall be likely to proceed—may we say, advance?—in matters of artistic design on the establishment of peace. We may hope and indeed prognosticate that we have, in architectural design, about completed the gamut of revivals: the present phase of pseudo neo-Grec we regard as essentially transient. L'art Nouveau has run through its early course of eccentricity, at least as far as England is concerned, but has left its impress on some of the best work of our most thoughtful designers in the direction of simplicity and restraint, and it is in the direction of the further manifestation of these qualities with refinements in proportion that we hope, and indeed expect, that our immediate future lies.

There is every indication that when the present conflict of guns and shells, bombs and torpedoes, is over, we shall be confronted with an economic struggle in the endeavour to repair the material wastage of the present by the profits of commerce and industry, in which the antagonists will be grouped very much as they are now. That is to say, we and our Allies will be in competition with Germany and hers. Already our chambers of commerce and manufacturers' associations are discuss-

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ing ways and means. We, in the building trade, can herein take our share. As we have repeatedly pointed out, the building trade of this country during the last thirty years or so has been invaded by goods made in Germany, by so-called inventions, often no better than plagiarisms and usually of very small intrinsic value, pushed with considerable commercial ability and backed by the credit and support of the whole German Empire. All such goods must, in the future, be excluded from the specifications of our architects, the stock of our merchants, the yards of our contractors. The agents who have handled these Hunnish interlopers must turn their attention to the products of our own country and those of our Allies. We must, in our own trade, second the efforts of those engaged in other British industries.

There are two reasons why we should do so. When war ceases there will be a large number of workers now engaged with the Colours or in the production of munitions who will require employment. We in the building trade must do our best to find them work rather than their present opponents. Secondly, true cheapness is the result of large production. By increasing the production of our own manufacturers we not only benefit the workers of our own country, but enable our people to produce cheaply, and in that we benefit. British makers have already in many industries, finding themselves free from German competition, shown their ability to supply all British requirements, and so it must be in the building trade.

The economic position of building after the war is a subject for interesting speculation. We hold the view that no one can with certainty predict the situation. As regards materials, there can be little doubt that timber will be scarce and dear. The tendency was in this direction before the war, and the wastage during the last seventeen months has been enormous. Steel and other metals used in building stand on a different footing. True, the wastage here also has been enormous, but the activity of production has been forced up to its highest capacity, and we expect that prices will drop to a low level when war demands cease. So also with cement; but brick and stone have not had the same experience, and we anticipate that the demand will—at first, at any rate—be greatly in excess of the war-diminished production.

And what of the position of labour? In the building trade we may be fairly certain that skilled artisans will be scarce, but unskilled labour will be plentiful. May we venture to hope that our trade-unions will learn from war-time experience the lesson that the true prosperity of the wage-earners lies in high production, not in artificial restriction of output. The output of this country in manufacturing industries has never been anything like as great as it is at the present moment. The dilution of skilled labour by unskilled has made this possible, and the result has been that the wages of the skilled are many times what they were when expert workmen were doing the work of unskilled labour. It is true that the industrial output is largely wasted war material, that the wages are war-time wages; but even before the war, the greater relative output of the United States and Germany provided greater wealth for their workers than our own people enjoyed.

Capital, no doubt, will be dear for some time after the war, and we must force the Government to utilise the credit of the British Empire to finance our commerce and industries as it is now financing the war-work of our Allies. In housing especially, but in building operations generally, our Government must be pushed to do for British industry what the German Government has done for its industries.

Economy, the lesson taught by the war, must be exerted in building. Our needlessly stringent Building Acts and by-laws must be modified. Useless ornament and every extravagance must be eschewed. Thought must take the place of tradition; so will a finer art arise, a real and satisfying expression of all that is best in our national character, now proved true by fire.

NOTES AND COMMENTS.

WE cannot but sympathise with the attitude of the President of the National Society of Art Masters, Mr. W. B. Dalton, at the recent annual meeting of the Society. Economy of national resources in all possible directions is, of course, essential, but true economy does not always lie in the direction of restricting expenditure. We must never be led in our retrenchments to the point where we tyne the ship for a ha'porth of tar. Education is especially one of those things in which niggardliness may prove false economy. Mr. Dalton, in his opening address, recognised that economy must be practised. The interests of the State demanded it and local administrators had a free hand to curtail expenditure. It was much to be regretted that the Board of Education had not issued a circular distinguishing between real and false economies. In the main the action of public authorities, as far as it affected the permanent staffs of art schools, was beyond reproach, but there was a more serious point. In some cases opportunity was being taken of the War to enforce, on the plea of economy, policies which, in normal times, would not have the slightest chance of consideration. Calling attention to the careful way in which Germany had made a place for herself in the industrial arts, he said that her endeavour, unlike ours, was not so much to produce decorative masterpieces as to influence the every-day things of life; in other words, to touch commerce as widely as possible. The movement must be combated, and the preparations for this after-war struggle ought to be going on now. Yet suggestions had been made for destroying the very means of education. We should want more and better organised education rather than less. It was impossible to overestimate the place which schools of art should occupy in the new world that would follow the war.

The extent to which artists, including architects, have responded to the call of duty during the War is well illustrated by some facts recorded in the report of the Board of Management of the Edinburgh College of Art for the session 1914-15. Five years ago a College section of the 5th Royal Scots was formed; a considerable number of students were also enrolled in the 9th Royal Scots and other Territorial units. These were called out in the beginning of August, and a number of students enlisted in other regiments before October. At the beginning of the session four members of the staff—Mr. T. Duncan Rhind, A.R.I.B.A.; Mr. Walter Hislop, Mr. David Alison, and Mr. Arthur E. Milne—were serving with the 5th Royal Scots and were unable to resume their duties at the College.

As the session went on, and the demand for men became more urgent, a most liberal response was made both by the staff and the students, and by the end of the session thirteen members of the staff, viz.:—T. Duncan Rhind, David Alison, David M. Sutherland, James Smyth, David Ramsay, Andrew Storie, Arthur E. Milne, Archibald F. Nicoll, John W. A. Allan, David Urquhart, Alexander Hall, William Rayner, and David Ballingall, and almost all the male students who were eligible for service, had enlisted. Some who were near the end of a long course waited till the completion of that course and enlisted at the end of the session. Early in the session a scheme of military training was instituted, the janitor, Sergeant Anderson, acting as instructor, and was carried on until the number available was so much reduced by enlistment that it was not found possible to continue it. By arrangement with the Merchant Company Education Board opportunities for rifle practice were obtained at George Watson's Boys' College.

Throughout the session the Board offered every encouragement both to members of the staff and to students who desired to enlist. Members of the staff who have joined the Colours will have their places kept open for

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them, and the Board are paying to them the difference between their military and civil pay. In the case of students, liberal arrangements have been made in respect of fees; bursaries already awarded have been suspended during the duration of the War, and in the award of bursaries regard has been had to the claims of students who are serving. No student has been allowed to obtain any bursary or other honour which, in all probability would have been won by a student who happened to be on active service.

The day classes have naturally been most affected, since a very large proportion of the male students attending the evening classes are below military age. The number of women students has been unaffected by the War.

The Board have good reason to be proud of the response made by their staff and students (fifteen members of the staff and 230 students joined His Majesty's Forces during the session) to the claims of their country, and day by day this pride is increased by the gallant record of the regiments with which they are serving. They feel that both staff and students have given an example of patriotism and devotion which will be an enduring heritage to the College.

The anthracite stove has become so much favoured by the housewife in these days of the paucity of female domestic labour that it cannot be too widely recognised that there is a danger in presuming that the new apparatus will go on for ever without attention and examination. This fact has, during the past week, been forcibly emphasised during an inquest at Bradford on an unfortunate man who, with his wife and daughter, were found unconscious in bed, all suffering from the effects of fumes from an anthracite stove. It was stated by one witness that when the anthracite stove was removed from the bedroom it was found that the outlet pipe was almost blocked up by corroded iron and soot, and this had been sufficient to prevent the escape of the fumes. Apparently it had not been cleaned out since it had been set up four years ago.

Dr. Stewart said that the stove emitted a fatal carbon monoxide gas, and it was very important where such stoves were used that there should be sufficient ventilation. There was sufficient blocking of the outlet pipe to prevent the proper escape of the fumes, but probably the change in the wind about that time might have impaired the regular ventilation which there must have been on previous nights.

The latest British standard specification issued by the Engineering Standards Committee is No. 73, that for wall plugs and sockets (five ampere two-pin, without earthing connection). This particular domestic electrical accessory, in view of its extended use, is one in which interchangeability is of most pressing importance, and architects will welcome the appearance of a British standard specification which, as usual, is published by Messrs. Crosby Lockwood & Son. The price of the present document is five shillings.

Naturally the prosperity which has come to the United States as their share of the War is reflected in the building trade of the country, and Bradstreet's journal's report on building at 137 cities for November shows a gain of 34.6 per cent. in permits, and of 55.9 per cent. in value over 1914, when building was at a low ebb. That the current returns are of and by themselves good, however, is proved by the fact that the total value is little below the November 1912 aggregate, the best ever recorded in that month, and that owing to the gain in November the eleven months' total of expenditure is now slightly ahead of a year ago, whereas decreases have hitherto been shown.

Wrexham Town Council, like many other authorities, has had its housing scheme checked by the refusal of the Local Government Board to sanction the necessary loan. It had been proposed to erect thirty houses on a site belonging to the Corporation, and the scheme included the provision of a new slaughter-house in proximity to the houses. Two or three members of the Council opposed the site on the ground of unsuitability, and the Board in their letter also expressed the opinion that it was not altogether desirable for working-class dwellings. In suggesting a modification which would enable a saving to be made on street works, the Board pointed out that a revision of the by-laws would be involved. The Board added that they were not now in a position to sanction any loan for a housing scheme except where the immediate provision of the houses was urgently necessary in connection with war requirements, and as the present site would not in any case suffice for thirty houses which they had asked the Council to provide, the Council might prefer to make a further effort to secure a suitable site large enough for that number. In the discussion which ensued upon the matter, Dr. S. Edwards Jones made what we consider to be a very sensible suggestion and one which points to a policy that would greatly help to solve the present difficulty of housing accommodation throughout the country. He considers that it would be much better for the Local Government Board to define a policy and say:—"We will allow you, owing to the scarcity of labour, the increased cost of building, and the excessive calls upon the ratepayer and the taxpayer, to build houses of a much cheaper material, as long as they are healthy and otherwise fulfil the requirements of the Public Health Act." In this Dr. Jones agrees with our correspondent, Mr. W. H. Wood, whose letter appears on p. 15. There can be no doubt that our present ideal standard of housing accommodation for the poorer workers has been getting too high for our resources in these times. We want healthy homes for our workers, but we do not want them so substantially built that they will develop into slum dwellings because they cannot be scrapped. This same question, our readers will remember, has been dealt with by a departmental committee as affecting school buildings. Modern progress is so rapid that nearly all buildings are hopelessly out of date within a century after they are built and we need to scrap them in about thirty or fifty years' time.

ILLUSTRATIONS.

THE LORD WANDSWORTH INSTITUTION, HAMPSHIRE.

THE Lord Wandsworth Institution is now being erected in Hampshire for the training and education of students in agriculture and the allied crafts.

Our illustration shows the central block, in which are incorporated the great hall and class-rooms, &c., flanked by the engineering schools on one side and the chemical and physical laboratories on the other, connected by colonnades with the main building. The administrative offices are on the extreme left by the entrance, and behind the central group of buildings are the electric-power house, bakery, laundry, cottages, and other subsidiary offices.

The homes for the boys and masters will be on either side of the wide open space to the south of the central buildings, after the collegiate type of planning; but as there is ample space, there will be no crowding of the buildings into a limited area.

A chapel, hospital, and every other adjunct connected with the working of a large institution will be added; but though at present much of the work is in hand, progress is but slow, owing to the shortage of labour and difficulty in transport of material.

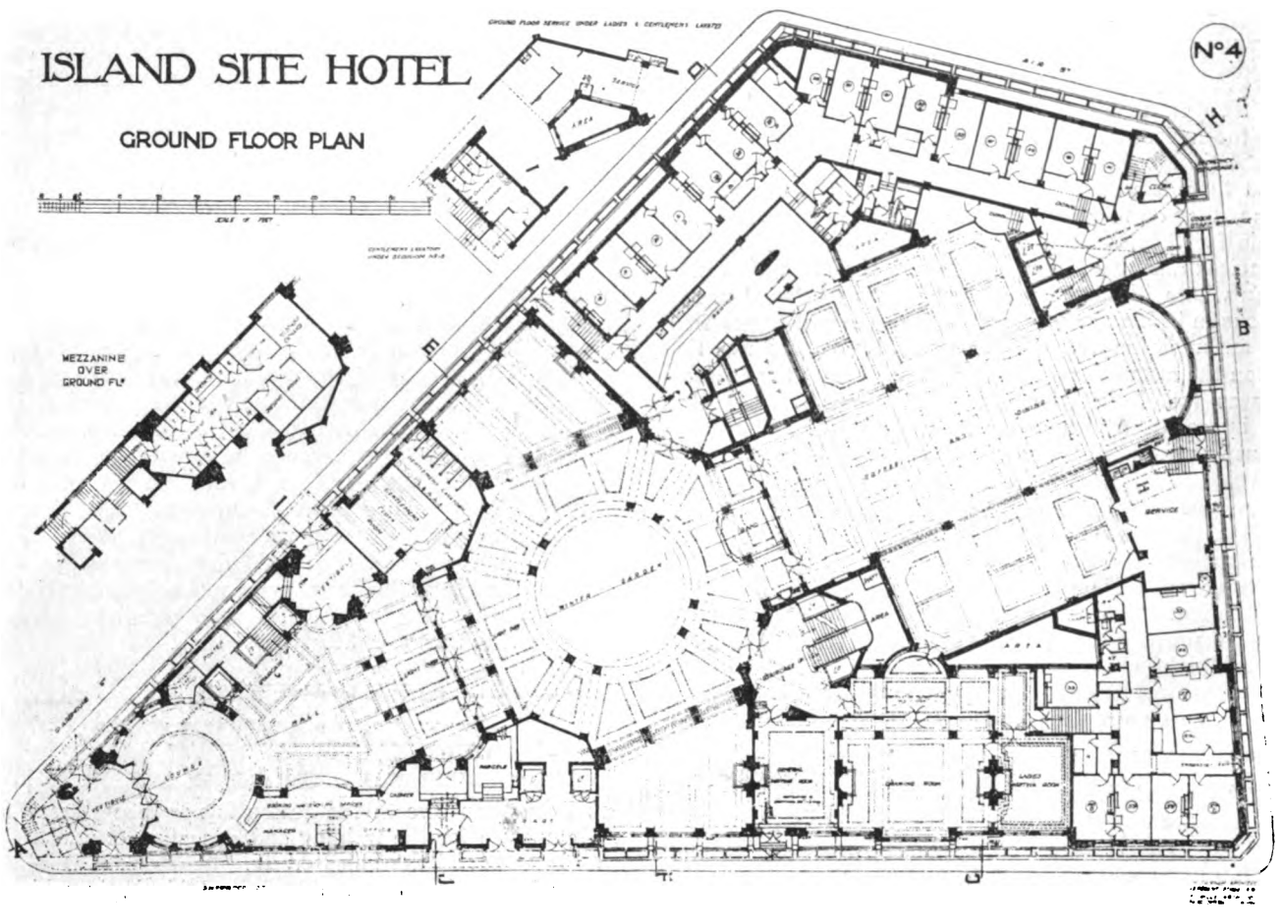
The contractors for the works now being built are Messrs. Musselwhite & Son, of Basingstoke, and the architect is Mr. E. Guy Dawber, hon. sec., R.I.B.A.

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REGENT PALACE HOTEL, REGENT STREET, W.

THIS hotel has been erected for the Strand Hotel, Ltd., close to Piccadilly Circus, W., on an irregular island site measuring just over an acre in extent, and is claimed to be the largest in Europe. It is a steel-framed structure constructed and equipped on the most up-to-date lines.

The external facing is "Burmantofts Marmo," a glazed terra-cotta manufactured by the Leeds Fireclay Co., Ltd., Leeds, and Norfolk Street, London, which has found very considerable favour both at home and abroad during the past few years. The roof is covered with green slates. The ground floor, of which we give a plan, is chiefly occupied by lounges, a large winter garden, dining-room, restaurant, drawing-room, and writing-rooms. In the basement there are grill and billiard rooms of ample size, ladies' and gentlemen's toilet saloons, and all the other necessary adjuncts which go to the making up of a modern hotel. The upper floors contain 1,028 bedrooms, each of which is provided with a lavatory basin with hot and cold water.



The fact that about 6,000 tons of steel was used in the building and that there are nearly two miles of corridor will give some idea of the magnitude of the scheme.

Mr. A. H. Barker, B.A., B.Sc., Wh.Sc., was the consulting engineer for the ventilating and warming of the hotel, in conjunction with Mr. Cushion, of Messrs. J. Lyons & Co., as well as for the general engineering plant. A detailed account of this important though often overlooked feature of the building was given in the "Architect and Contract Reporter" for June 18 last. As we then said, "everything that money, expert knowledge and a desire for perfection could provide would appear to have been incorporated."

The general contractors were Messrs. J. Mowlem & Co., Ltd.; the steelwork contractors were Messrs. Dorman, Long & Co., Ltd.; the plastering was done by Messrs. A. & S. Wheater; the plumbing by Messrs. Dent & Hellyer; the ventilating, heating, and hot-water systems by Messrs. J. Jeffreys & Co., Ltd.; the metalwork by Messrs. H. W. Cashmore & Co., and Messrs. Strode & Co.; and the decorative work by the Bromsgrove Guild, Ltd., the Birmingham Guild, Ltd., Messrs. George Jackson & Sons, Ltd., and Messrs. Marshall & Co. The lift engineers are Waygood-Otis, Ltd., who also installed a most complete vacuum cleaning equipment. The Bovis patent reversible window fittings were adapted to all the windows, with the exception of the metal casements.

The architects are Mr. Henry Tanner, F.R.I.B.A., Mr. F. J. Wills, and the late Mr. W. J. Ancell.

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—I.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

IN normal times the busy architect finds it exceedingly difficult to obtain a period for holiday sufficiently extended to allow him to do justice, as it were, to the magnificent scenery and the wealth of architectural beauty to be found on such a trip as the one which forms the subject of this series of articles.

Although the holidays of busy men are not only scarce but short, there is in these days of fast and comparatively comfortable travelling very little excuse for ignorance of continental beauty and art.

Perhaps the scarcity of holidays of reasonable duration and the comparatively limited time granted when they do happen tends to a little too rapid travelling.

The desire to see so much in so little time gives the tendency to get over too much ground, and thereby full justice is certainly not granted scenes and monuments deserving long sojourn for proper study; but the writer would suggest that however rapidly undertaken, a short holiday through the Italian lake district and on to Northern Italy is to the student of architecture well worth all the discomfort it is necessary to undergo, and cannot be undertaken without considerable pleasure and education.

Starting from Paris and entering Northern Italy by

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the entrance gate selected by most travellers from the North of Europe, especially if it be for the first time, such a veritable feast is provided that the traveller, if he be an architect or artist, longs for the unlimited time and means to wander at leisure, sketch-book and camera in hand, passing through the smiling valleys, across the deep-blue lakes, over the glorious mountains, and through the delightful and picturesque villages, towns, and cities, and over surely one of the most interesting and beautiful parts of the world.

Some years ago the writer travelled, very rapidly it is true, through Belgium, visiting some of its noble



NEAR ALTKIRCH, ALSACE (from train).

cities, and the memory of the pleasure and knowledge obtained from this visit is still quite fresh. It is this remembrance and the knowledge of the devastation, terrible in the extreme, which has taken place in this, one of the most beautiful of all countries, by a ruthless enemy, that conjures up a feeling almost of despair as to the irreparable damage this same enemy would perpetrate if granted the opportunities in the other and equally beautiful areas dealt with in these short notes of a further short holiday.

At the present time, when the greatest of all wars in history is waging, the writer recalls a few very enjoyable and instructive weeks spent with a camera in journeying over ground interesting to the architect at all times, but at the present time especially interesting because of the terrible conditions existing to-day on this very route, and the knowledge, unfortunately common, that possibly the treatment meted out to unfortunate Belgium by the enemies of civilisation will be repeated to an even greater extent and degree in the cities of Northern Italy if circumstances should present the opportunities.

Having looked forward for some years to this holiday (eventually undertaken in the autumn of 1913), the start was made with no definite object in view, so far as the study of any particular architectural period was concerned, other than a desire for relaxation and pleasure and to obtain, as it were, an artistic and architectural ramble.

The various photographic views were taken not with any preconsidered intention to make use of them in the form now intended, but simply for the personal gratification of, in after years, being able to recall more distinctly and vividly the various incidents of the holiday.

The views taken near Basel and some on the St. Gotthard line were taken from the train while travelling, and are therefore, perhaps, not all one would wish them to be; but after all they constitute a permanent record, together with all the other views taken, some very much better, of interesting and in many cases impressive incidents of the travel.

Nevertheless, it is with a certain amount of nervousness that the writer presumes to put forward in the shape of a series of articles the various materials collected in an all too rapid journey.

A confession must be made that no time was of course available for the examination of documentary history of the buildings, &c., described or illustrated, and that the dates, where given, are generally obtained at second-hand.

The peculiar and unprecedented international situation of to-day has suggested to the writer that a short illustrated account of a ramble over ground the scene of the most frightful carnage and destruction at the present time may be of more than ordinary interest to the architectural student.

The majority of tourists select a period for a visit to Switzerland somewhere between the middle of July and the end of September; but if it is desired to view the scenery and vegetation and particularly the Alpine flowers at their best, June is perhaps the best of all months in the year.

The snow disappears generally from the Rigi and the other mostly used routes through the Bernese Oberland before the middle of May; but snow is frequently seen on the higher peaks as late as September, and some lies the whole season.

It may also be interesting to those intending to take this journey in the future, when peace is once more established, to know that during the autumn period passenger traffic from Paris to Northern Italy, and more especially as far as the Italian lakes, is exceedingly great,



NEAR BASEL (from train).

and the capacity of the trains does not appear to be anything like equal to the demand made upon them by the travelling public.

The coaches, constructed upon the American plan, which internally are very good, externally very black

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and grimy looking, are crowded to their utmost capacity. The corridors are usually filled with passengers unable to get seats, and in addition the luggage other passengers have been unable to get into the carriages. Passage from coach to coach through the corridors is at times almost impossible. The lavatory accommodation is by no means as good as we find on our English railways. With these few somewhat important reservations one might say that travelling is as comfortable on very long journeys as one can expect.

The first portion of the journey may be passed over as being of no special interest, for there is not much to write about on the journey from London to Paris. Having rested on the first evening in Paris at the Hôtel Terminus de St. Lazare, a fine building containing many very interesting features to the architect engaged in modern hotel work, a start is made on the following evening from the Gare de l'Est, one of the great railway stations of the French capital.

Those travelling on the particular evening in question were destined to be treated to an experience of a somewhat exciting nature, and one, the writer thinks, no one would desire to have repeated. Some two miles outside of the station, just as the train was beginning to gain a little speed, the passengers were startled by a sudden and rapid pulling up. It appeared that an on-coming train by some peculiar error on the part of the signalman, travelling at a fair speed upon a set of rails crossing



VIEW AFTER LEAVING BASEL (from train).

the main outward lines obliquely, struck the centre of the outward-bound Milan express, derailing the attacking engine and a few coaches and somewhat badly bulging the attacked coach adjoining that in which the writer was comfortably settling himself for the all-night journey.

Apart from this somewhat disconcerting incident and a delay consequent thereon of some two hours, caused by the entire transference of the trainload of passengers and luggage into another train, nothing further exciting occurred, and the lights of Paris were left at about midnight, and the express began its long journey towards the lake district of Switzerland and Northern Italy.

After some eight hours' journey Basel is reached. The situation of this town has at the present time more than usual interest. To the north lies Baden and Alsace, the latter having been partly crossed in reaching this point.

Basel lies on both banks of the Rhine, which, turning to the north, here enters the Rhenish plain. Klein-Basel lies on the right bank, with its numerous manufactories, and on the left bank Gross-Basel, on two hills separated by the Birsig valley, through which run the Freie-Strasse and Gerber-Strasse, those ancient arteries of traffic.

The town of Basel, known in the year 374 as Basilia, lay close to the old colony of Augusta Raurica, first established in 27 B.C.

In the Middle Ages Basel was a free town of the Empire, and it has been a member of the Swiss Confederation since 1501.

If time permitted, the picturesque minster of red sandstone, with a brilliantly-coloured modern roof and two slender towers, seen from every part of the city, is worth a visit. Down to the Reformation it was the cathedral of the old bishopric of Basel, the oldest portions dating from 1185. The structure was rebuilt in the Gothic style in 1365, after an earthquake and fire in 1356.

After a stop of a few minutes at Basel, which is the frontier station, the journey is continued to Lucerne, which is reached in about two and a half hours, *via* Olten.

The railway line traverses the broad grassy Wigger-Tal and through the busy little town of Zofingen. Near Nottwil the Lake of Sempach is approached, being five miles long and one and a half miles broad, and abounding in fish.

On the right the bold peaks and cliffs of Pilatus are seen, and on the left the long crest of the Rigi and the Titlis, and, between, the snowy Alps appear.

The line crosses the Emme above its confluence with the Reuss, and following the latter, is joined on the left by the Zurich and Lucerne line and on the right by the Berne and Lucerne line, and again on the left by the St. Gotthard line.

Finally, after passing through two short tunnels and describing a wide curve, Lucerne is reached, certainly with a considerable amount of relief.

By the arrival at Lucerne the most uninteresting part of the holiday, to the architect, has been completed.

(To be continued.)

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

AN extraordinary general meeting was held on the 16th ult. at the Institute Rooms, 31 South Frederick Street, Dublin, to confirm alterations in the bye-laws. This was followed by the annual general meeting.

The president, Mr. R. Caulfeild Orpen, B.A., R.H.A., occupied the chair.

The hon. secretary read the Annual Report of Council, which stated:—

The end of the great world war in which our nation is taking its share is not yet in sight. During the long period of suspense which we are called on to endure with fortitude, active enterprise in any direction other than military seems out of place. Thus it is that you will find in our report little record of fresh developments, but considerable evidence of steady and useful work.

In the forefront we would like to pay a tribute of respect to those of our members who have undertaken the great adventure of arms—C. H. Mitchell, J. M. Mitchell, Page Dickinson, F. B. Craig, Frank Sparrow, and one A. W. Reid, who, though not a member of our Institute, has been, as an architect practising in Dublin, closely connected with us in professional work. We are confident all these will show themselves brave and capable. They have honoured our Institute by their action.

Considerable disappointment has been felt owing to the postponement of the adjudication in connection with

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the competition inaugurated by the Earl of Aberdeen. Your Council urged his lordship to take steps to have the award made and published last spring; but was informed that the difficulty which the occasion presents of bringing the assessors together is such as to render inevitable the holding over of the adjudication till after the war.

Early in the session the Council appointed a "Relief Works Committee" This committee drafted a scheme which aimed at the encouragement of building enterprise by insuring employers against loss owing to the rise in the cost of material during the period when a building contract was in force.

This scheme, embodied in a report, was submitted to and approved by your Council. The committee then laid the proposals before the Mansion House Relief Works Committee, and the scheme received its cordial approval. A deputation, representative of both these committees, waited upon the Vice-President of the Local Government Board, was sympathetically received, and a promise given that the scheme would have the careful consideration of the authorities. Where the details of the scheme are now, only Whitehall or the Custom House know; certainly the attitude of the Government in regard to all building expenditure at the present time would suggest that our proposals have reached the oblivion of an official pigeon's hole.

The War Committee have been co-operating with a similar committee of the Royal Institute of British Architects. This latter body has reversed its original policy of local registration of architects fitted for special branches of war service, civil or military, and has now adopted a system of centralisation. It is obvious that this earlier policy proved inefficient; the effect of the more recent cannot yet be judged.

The Corporation of Dublin have invited the Arts Committee to examine and report on the suitability of a series of frescoes, illustrating incidents in Irish history, which Mr. James Ward, headmaster of the Metropolitan School of Art, had very generously offered to paint as a decoration to the circular vestibule in the City Hall. Mr. Ward had painted and fixed in position three cartoons, and these the committee very carefully considered and presented a report, which (having been approved by the Council, was forwarded to the Corporation), while generally approving, contained suggestions for slightly modifying the colour and scale.

The urgency of taking serious steps to make a record of buildings in Ireland of historical or architectural interest was brought forward at a general meeting by Mr. P. J. Lynch. The Council, impressed by the imperative necessity for such a record, appointed an "Ancient Buildings Committee" to consider the question and report. Mr. P. J. Lynch consented to act as honorary secretary to this committee, and he has presented a very admirable statement, showing the need for action and the steps which our Institute might legitimately and effectively take.

There was no studentship examination held this year as no candidate applied.

The Council felt that our annual dinner was a function which might, under existing circumstances, be omitted this year, so none was held. It remains with the incoming Council to decide whether we shall dine together this winter or not. The loving cup presented to the Institute by the late Lady Drew has been suitably engraved recording the benefaction.

The Council presented an address of welcome to Lord Wimborne on his arrival in Dublin as His Majesty's Viceroy, to which His Excellency replied.

The Professional Practice Committee has done a great deal of useful work, as its report will show. One matter with which it has dealt should be noted here, namely, the drafting of certain clauses to be inserted in Conditions of Contract dealing with tenders to which the "European Crisis Clause" has been attached. As this is a matter in which the building trade is interested, the Council invited representatives of the Dublin Building Trades Employers' Association to meet it and discuss the draft clause. The representatives of the building trades appeared to think that the existing Conditions of Contract sufficiently protect the parties interested, and the question as to the adequacy of these conditions has been referred to the solicitors of the Institute and of the Association who have been asked to consider the matter in conference and to report. The Professional Practice Committee has also drafted some important amendments to the bye-laws which have been passed and confirmed by two special general meetings.

The revised scale of professional charges adopted by the Royal Institute of British Architects but not yet published has been under the careful consideration of your Council. This revised scale will not be put in operation during the war, and consequently your Council think it unwise to come to a decision as to its adoption by our Institute. It is to be earnestly hoped that a settlement of the question of professional practice charge—the difficulty in regard to which was the chief cause of our estrangement from the Ulster Society—may lead to more happy relations between the two bodies.

The Kingstown Urban District Council in the summer of this year invited architects to apply for appointments in connection with certain housing schemes which they were promoting. The terms under which architects were invited to offer their services appeared to the Council to be unjust, in that it was definitely stated that in the event of the whole or any part of the contemplated schemes being abandoned, no remuneration in respect of such schemes would be paid to the architects.

The Council asked the Urban District Council to receive a deputation to discuss the subject. This request was granted and your president, vice-president, and Mr. R. M. Butler attended as representatives of the Council. The deputation asked for two modifications of the conditions of appointment.

(1) That the principle of 5 per cent. for original work should be preserved by paying this commission on the cost of the typical house in each group of cottages; pointing out that in houses of such low cost as those contemplated, such a concession would be of trifling importance as regards outlay.

(2) That the Urban District Council should undertake that on the appointment of an architect, it would thereupon arrange with him a suitable fee to reimburse him for professional work in the event of any portion of the scheme for which he had prepared designs being abandoned.

Both these requests appeared to receive the approval of the Housing Committee The Council was therefore the more surprised to find from the reply received, dealing with your deputation's request, that, while agreeing to recommend the Urban Council to pay a 5 per cent. fee on the cost of the typical house, they revised the previously advertised fee of 2½ per cent. to cover all "repetition work" and fixed the rate of remuneration at 2 per cent.; and, further, that our second request, as to remuneration for abandoned work, had been dealt with in a clause in the conditions of appointment which was quite useless as a guarantee, as it merely stated that, in the event of work being abandoned, the promoters might consider a claim put forward by the architect in respect of out-of-pocket expenses.

The Council felt compelled, in view of the action of the Urban District Council, to advise its members to refrain from offering their services, or, in the event of their having done so, to withdraw their application.

The Council desires to record its high appreciation of the action of its members in following the advice it felt compelled to give. It is most gratifying to find such proof of unselfish loyalty, especially at a time when important commissions are so rare.

On November 20 the Institute was the host of a large number of wounded soldiers in the Royal Dublin Society's

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Buildings at Ballsbridge, in connection with the scheme inaugurated by the Irish Automobile Club.

We regret to announce that the following members have resigned during the year:—W. J. Fennell, J. F. Fuller, and Sir Thomas Deane. To the latter we would offer an expression of profound sympathy in the loss in the Dardanelles of his only son. May we hope that when the terrible war clouds are dispersed these old and valued friends of our Institute may rejoin us again, and give us their loyal support as they have done in the past?

Death has taken from us R. C. Millar, Robert Stirling, and W. H. Lynn—a heavy toll.

Two leading members of the building trade, widely known and highly respected by all of us, James Beckett and James Martin, have also died during the present year.

The following have, since our last report was issued, been rated to Fellowship rank:—George Beckett, Frederick Hayes, W. S. Jervois, Louis E. Deane, Edwin Bradbury, R. M. Butler and J. J. McDonnell. The following have during the year been elected members:—H. J. Lundy, G. H. Yeoman, W. S. Keatings, W. T. Doherty, and T. J. Byrne. The rank of honorary member has been conferred on Professor Goodyear, of Brooklyn, U.S.A.

The scrutiny of the ballot for election of Council for the ensuing year was as follows:—Messrs. H. Allberry, G. P. Sheridan, J. H. Webb, F. G. Hicks, C. A. Owen, W. A. Scott, A. G. C. Millar, R. M. Butler, and G. L. O'Connor; Mr. Frederick Hayes, hon. secretary, and Mr. Lucius O'Callaghan, hon. treasurer.

REINFORCED CONCRETE AND SEWERAGE WORK IN MUNICIPAL ENGINEERING.

IN his recent presidential address before the Institution of Municipal Engineers, Mr. Henry C. Adams, M.Inst.C.E., M.I.Mech.E., F.R.San.I., &c., covered a wide range of subjects. From it we quote his remarks on two branches of municipal engineering, with which he is closely identified at the present time.

It is not so many years since the recognition of the action of bacteria in the purification of sewage was hailed as the solution of the sewage problem, and the principal outlet for ingenuity was held to be the consideration of efficient and economical means for the disposal of the sludge. The results of investigations during recent years show, however, that we are as far off as ever from reaching finality. For domestic sewages, septic tanks and percolating filters are adopted in such a large number of cases that they might almost be described as the standard system of the present day. On the whole, this combination is very efficient and fairly economical. The main cost of such works lies in the filters, or, to be more exact, the filtering medium, and future developments may be looked for in the direction of perfecting methods of oxidation and nitrification of the sewage without recourse to expensive filters. The methods of purifying sewage in manufacturing districts vary very considerably in accordance with the nature and proportion of trade wastes which may happen to be present. Excessive variation in the volume and character of the sewage owing to the uncontrolled discharge of trade wastes adds to the difficulty and expense of treating it. The construction of special storage or equalising tanks, and cordial co-operation between the manufacturer and the local authority, will go far to overcome the troubles.

The sewerage of sea-coast towns presents peculiar features which are absent in works for inland towns, and which are sufficient to render it a special branch of sewerage engineering. The old idea that so long as the sewage could be discharged into the sea there was an end of it is quite exploded, and the dangers arising from an improperly devised scheme are well known. The prosperity of many sea-coast towns depends solely upon the revenue derived from the visitors who periodically journey thither in search of health and pleasure; it is therefore essential to the interests of both the residents and the visitors that the sanitation should be as perfect as possible. Indeed, the visitors have a right to demand that when advertisements are issued inviting their patronage there shall be an implied guarantee that the conditions are such that their health will not be jeopardised. In designing an effective sea outfall scheme, the point of discharge, the volume of the sewage, and the extent of its treatment, if any, are mutually dependent on each other. A small quantity of sewage can safely be discharged at a point where a large quantity could not be, and similarly a partially treated sewage could be discharged where crude sewage could not. The abnormal summer population may lead to nuisances which would not occur in the winter when only the permanent residents were in the town, and in the same way a sea outfall scheme which sufficed for a small population might have to be abandoned in course of time as the numbers increased. The cost of a sea-coast scheme is generally comparatively high because provision has to be made for a population greater than that directly assessed for the payment of it.

During the past year the Ninth and Final Reports of the Royal Commission on Sewage Disposal have been issued, and the labours of that body, extending over a period of nearly seventeen years have been brought to an end. The commission has done a great work in collating the experience of practical workers in the realm of sewage disposal, and has pursued many investigations to extend that experience and to settle points which were in dispute or doubt. The matter published is so voluminous and is so badly indexed that it has been a matter of considerable difficulty to turn up any particular matter to which one wished to refer; consequently the "Guide" which has recently been published by the engineer to the commission forms a welcome appendix. The whole subject of sewage disposal has been dealt with principally from the chemical and bacteriological aspect. It is pointed out that, under certain conditions, with certain treatment, certain results may confidently be expected, but the engineering means by which the necessary treatment may be given to secure the required results are, naturally, treated very scantily. The reports have amply demonstrated that there are many ways in which sewage may be purified, but the means to be adopted to produce the best results will depend upon the circumstances of each particular case. In the design of a scheme the chief technical factors to which consideration has to be given may be summed up as:—

(1) A clear understanding of the conditions of each case and the disturbing factors.

(2) A suitable working-out of the details.

(3) Planning of the works to ensure a maintenance of efficiency, and economy in their management.

It is obvious that there is ample scope in these matters for the utilisation of expert knowledge and practical experience, so that, useful as the reports are, they do not eliminate the need for skilled engineers, or reduce the responsibility devolving upon them.

The conclusion of the commission's labours is only a milestone on the road of progress, and further and continuous research is necessary. It is characteristic of an engineer that he is never satisfied. It is his business to do things, but it is not sufficient to do them well, he must do them economically, and, having succeeded in one case, he strives in the next to secure still higher efficiency and greater economy. If money were no object a high state of perfection could be reached in every scheme, but this is not always necessary, and consequently it is of the utmost importance that an engineer should have a well-developed commercial instinct. It is useless designing or recommending schemes the cost of which, if carried out, would be ruinous to the ratepayers and prevent any other improvements being carried out in the district for many years to come. Finally, it is a *sine quâ non* to have an experienced man as sewage

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works manager; the work cannot be done by an ordinary labourer. A poor man will spoil the result from the best arranged works, while a good man may get a decent result from an ill-designed scheme.

With the exception of small highway bridges, comparatively little progress has been made in the application of reinforced concrete to municipal works. One factor is, no doubt, that much of the work to which it may be applied is small in character and in positions difficult of access or remote from the centres of population. To ensure satisfactory results it is essential that the whole of the work should be constructed by skilled labour under the direction of men with an extensive experience in such work. As these are not generally available in every district, the cost of the work would necessarily be high. Another, and perhaps the principal, reason, is the extremely short period which the Local Government Board will allow for the repayment of loans for work done in this material. It would appear that in this respect the board have departed from their usual practice of fixing the loan period co-determinate with the probable useful life of the projected work, or the average life of work of a similar character, because it is well known that the actual life from numerous practical examples has already greatly exceeded the loan periods allowed; and it is surmised upon good and substantial evidence that its life is unlimited. Consider the two materials—concrete and steel. The concrete grows stronger the older it gets, and the steel, when properly embedded, is imperishable. When a structure is once loaded to its full extent without failure, but little fear may be felt as to its future, provided, of course, that the steel is not stressed beyond the elastic limit. If this is done it will stretch, and the concrete on the tension side will crack, and that on the compression side may spall, with the result that moisture will penetrate to the steel, causing rust and eventually leading to failure. The workmanship is most important, and the concrete must be dense in order that it may satisfactorily protect the steel.

Reinforced concrete, in common with some other branches of structural engineering, is to a great extent in the hands of individuals and firms interested in a particular form of construction, or, to adopt their own title, "specialist firms." In small steelwork structures, such as simple roof trusses, portable iron buildings, &c., it is common for the manufacturers to design the work and afterwards to supply the materials, or the completed structure. In reinforced concrete it is more usual for a "specialist firm" to design the work, which is subsequently carried out by a "licensed" contractor. The design of reinforced concrete is based on well-known fundamental principles of mechanics, although practical experience shows that it is desirable to make certain allowances which are not necessary under other circumstances. No doubt in future every civil engineer will acquire knowledge in this branch as a matter of course, in the same way he now studies brickwork, but at present such knowledge is not general, and, apart from the "specialist firms," there are only a limited number of independent engineers who are qualified and competent to design such work, or to verify the calculations relating thereto. The latter men are, however, now sufficiently numerous to cope with the amount of work to be done, only their natural modesty, to say nothing of professional etiquette, prevents their existence being so well advertised as that of the "specialist firms." The result is that the bulk of the work is in the hands of such firms, and the usual practice is for general designs or sketch plans to be sent to some half-dozen of them, who each spend valuable time and money in preparing detail designs and tenders for the work. The work of some of these firms may be above criticism, but there are others who betray lamentable ignorance or carelessness. All schemes, however, with a view to cheapening the cost, are naturally based on the minimum requirements, and the margin for contingencies in workmanship and materials is of necessity small. It must not be supposed that the client reaps the whole of this advantage of competition, because the cost of preparing the design, and not only the accepted design, but many others for other clients which have not been accepted, must be charged in the tender. I am informed that in a case recently heard in the courts it was given in evidence that it was the custom of the "specialist firm" concerned to charge 10 per cent. upon the cost to cover the designing charges. It would be advantageous if these and similar items were set out separately in tenders, as it would be efficacious in demonstrating to the public who employ engineers in a professional capacity that the money paid direct to them by way of salary or fees is far from being unreasonable having regard to the services rendered.

After designs have been obtained in the way described, and one has been selected for construction, the Local Government Board sometimes requires that it shall be subjected to an independent opinion before a loan will be sanctioned, and this, of course, means further expense in fees. There is no reason at all why reinforced concrete work should be treated differently from, say, sewage works or waterworks. It might be argued that it is like buying a single article, but even so, the interests of the client demand the preparation of a detailed specification, and subsequently the exercise of sufficient skill and experience to see that the conditions of the specification are fulfilled in the design and in the construction.

The Treasury restrictions on the raising of loans have practically put an entire stop to the construction of all municipal works, and incidentally have removed the means of livelihood from many people who were dependent upon the carrying out of such works. When these restrictions are withdrawn we shall be faced, as we were before they were instituted, with the difficulty of the high cost of construction. In the past, sanitary works, and other works which were not of an obviously remunerative character, were postponed as long as was possible on the score that the expense could not be afforded. What will be the effect in the future if such works cost perhaps 10 to 20 per cent. more than before, while the individual capacity for paying for them is very materially reduced? My own opinion is that the constructive cost of engineering works will never be appreciably lower than it is at present. The increase is almost entirely due to the high wages paid for the labour—not only that directly engaged in the construction and erection, but in that required for the production of the materials and commodities employed. Bearing in mind the strength of its organisation and the successive steps by which Labour has secured a place in the sun, it requires a very sanguine temperament to anticipate the acceptance of any appreciable reduction from the wages which have now been secured.

ANCIENT LIGHTS.*

By A. E. PORTE, M.I.E.E., M.I.C.E.I.

THE object of this paper is to bring before the members of the Association a new method of determining with accuracy the diminution in light (coming to existing buildings) caused by the erection of new buildings in their vicinity.

I propose to divide the paper into two parts, first, some notes on the legal aspect of the case, and, secondly, to deal with a graphic method of determining the loss of light due to obstructions.

I need scarcely say that I do not pose as an authority on the law of easements, but every engineer has, sooner or later, to deal with some problem demanding at least enough knowledge of this subject to keep himself or his client out of the clutches of the law. This must be my

* A Paper read before the Engineering and Scientific Association of Ireland at the Royal College of Science, Dublin. The chair was occupied by P. C. Cowan, D.Sc., President.

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excuse for inflicting myself upon your patience for a short time.

I will only give a very brief sketch of the law and recommend those of you who wish to dip more deeply into the subject to study "Gale's Law of Easements," "Goddard's Law of Easements," and "The Laws of England" edited by Lord Chancellor Halsbury and others, Vol. XI. and supplement, which brings the cited cases and decisions down to 1914.

The law of easements is probably as old as the history of architecture itself, certainly dating back to Greek and Roman times. "Easement" is defined by Goddard as follows: "An easement is a privilege without profit, which the owner of one tenement has a right to enjoy in respect of that tenement, in or over the tenement of another person, by reason whereof the latter is obliged to suffer or refrain from doing something on his own tenement for the advantage of the former," and later on he says: "An easement is not a property but a right in somebody's property."

Easements are various: Right to light, right to air, right to support, right to water, right of way.

Now, glancing at this very short list the layman can at once see that these rights fall under two heads: First, there is what one might term "Natural Rights" which are secured by common law—light, air and water; and, secondly, those which are granted by a landlord; for example, for the benefit of a tenant or neighbour, such as "right of way."

The person who owns a building claiming "ancient lights" is termed the "Dominant Owner," and the party who must not obstruct his light is called the "Servient Owner." The dominant owner's right is passive; his only control over the servient owner is that the latter shall abstain from erecting his building in such a manner as to obstruct the dominant owner's light.

While I am speaking of this right I may say that exactly the same law applies to the interference with lights as with the discharge of smoke from chimneys, interference with flow of water, the discharge of chemicals or objectionable gases into the air or pollution of streams.

The last named are usually classed as nuisances, but all come under the general law regarding easements, since a right may be acquired in almost every case by usage.

There is only one condition, as far as I know, under which no right can ever be established, and that is against the Commonwealth or the Crown; I may, however, refer to this later if time permit.

There are few subjects that have been the cause of more litigation than "Ancient Lights." Light, as I stated a moment ago, is a natural right, enjoyed equally by each individual, so long as his idea of use and enjoyment of the gift does not interfere with other persons' use or enjoyment of the same.

Every owner of land has a right to build on that land as he pleases, and to open windows where he pleases. Call this owner "B." The fact that one of "B's" windows may look right into another man's windows—call him "A"—or into his yard or garden, is not of itself a disturbance of A's rights. Even if B by his building obstructs A's light (or air), he is not responsible unless A has acquired a right to the light coming to the particular part of his building from which the light is obstructed by B's building. On the other hand, A may proceed to build a wall cutting off the light and air from B's window.

Again, if A's house is twenty years standing, every window which has been uninterruptedly in use for twenty years has acquired by prescription the right known as "Ancient Lights," with which no interference can take place. He is then a dominant owner. If, however, A thinks he wants more light and knocks out an extra window, his neighbour (the servient owner) can, without fear, build up a screen or wall to obstruct light and air to the new window, but he must be most careful not to obstruct the light to any other windows which have acquired "Ancient Light" rights either in A's or any other person's property.

In dealing with prescriptive rights Lord Halsbury says:

"It is not, however, necessary in the case of a claim by prescription at common law to prove user for twenty years next before the action in which the claim is made."

The right to uninterrupted light may be acquired by covenant expressed or implied or by prescription. Therefore, in certain cases ancient lights may be acquired without waiting twenty years. Such cases arise often when owners of houses and land sell the houses and land to different purchasers.

Suppose a man sells a house and retains adjoining lands he cannot (as a general rule) build upon his land so as to interfere with the light coming to the windows of the house he has sold, because there is an implied covenant in the sale of the house that the lights will remain as when sold.

The reverse case is the vendor disposing of the land and keeping the house. The boot is then on the other foot, for if he gives an absolute conveyance of the land, the purchaser may build out the vendor's light. The third case is presuming the house and land are sold to different purchasers at the same time, then the purchaser of the house is held to have secured his right to light as the first case quoted above.

The prescriptive right was established by Act 2 and 3 William IV. cap. 71, passed 1832; it was extended to Ireland in 1858—21, 22 Vic. cap. 42.

The Prescriptive Act, 1832, was passed in order to get rid of the old legal expression "time immemorial," and "time whereof the memory of man runneth not to the contrary."

Section 3 of the Act of William IV. reads:—"That when the access and use of light to and for any dwelling house, workshop or other building shall have been actually enjoyed therewith for the full period of twenty years, without interruption, the right thereto shall be deemed absolute and indefeasible, any local usage or custom to the contrary notwithstanding, unless it shall appear that the same was enjoyed by some consent, expressly made or given for that purpose by deed in writing."

Devolution.—"An easement when once validly created and actually subsisting is inseparably attached to the ownership of the dominant tenement, and so long as it continues to exist the benefit of it passes with the dominant tenement into the hands of every subsequent owner of that tenement, and the burden of it similarly passes with the servient tenement to every person into whose hands the servient tenement comes."

Obstruction of light is recognised by law as an injury which can be restrained by an injunction of the Chancery Court, or for which compensation may be granted at Common Law.

Proceedings by a restraining injunction have the very obvious advantage that the interference or obstruction is not usually proceeded with, and therefore the dominant owner does not suffer any serious inconvenience, and the servient owner has the pleasure of paying costs. Should the dominant owner allow a building to be erected by the servient owner, which may ultimately interfere with or obstruct his light, he will probably lose his right to an injunction when the building has arrived at a certain height.

If, however, the dominant owner were induced by false representation on the part of the servient owner or his agent that the light would not be obstructed, then he would, in all probability, have ground for action to have the obstruction abated.

Further, if the dominant owner asks permission of, or pays the servient owner, he cannot establish a prescriptive right.

It is no answer to the complaint of the dominant owner that the servient owner is providing more light

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from some other direction, or that the value of the dominant owner's property is improved by the buildings of the servient owner.

The dominant owner has a right to a certain amount of light entering at every window, and no serious diminution of this is allowable under the Prescriptive Act referred to above.

It matters nothing from a legal point of view whether the servient owner's building is opposite to or at any angle to the dominant owner's building, so long as there is interference with his ancient lights.

Complications sometimes arise when the dominant owner has altered or enlarged his windows, but these are legal points outside the scope of this paper, which only purports to give a sketch of the law on this most interesting subject.

In all cases the dominant owner must prove that injury has been suffered by loss of light.

In cities very often new buildings darken those opposite to them. In many cases the diminution of light is not of such a nature as to warrant an action for damages or an injunction. Such a case was tried by Chief Justice Best—Black *v.* Stacey. The Chief Justice, in his address to the jury, said: "In order to give a right of action there must be a substantial privation of light sufficient to render the occupation of the house uncomfortable, and to prevent the plaintiff from carrying on his accustomed business as beneficially as he had formerly done."

And Lord Chancellor Halsbury said: "Any substantial interference with the comfortable use and enjoyment of his house according to the usages of ordinary persons in the locality is actionable at common law. The mere interference with the light coming to the dominant tenement, or the main fact that after the interference complained of the owner of the dominant tenement has not as much light as before, does not of itself constitute a nuisance."

This brings us to the 45 degrees rule.

The many cases which came before the Courts led to an effort to fix a fundamental rule that might be a guide to servient owners, and thereby avoid a restraining injunction in Chancery, or an action at law to recover damages.

The general rule established and acted upon for quite a long time was: If the obstruction would not, when finished, be of such a height as to prevent light falling upon the window at an angle of 45 degrees, there would be no material obstruction of light, and no injunction would lie.

This dictum was laid down by the Vice-Chancellor, Sir John Stuart, who said that it seemed to him that where opposite to ancient lights, a wall is built not higher than the distance between the wall and the ancient lights, there cannot under ordinary circumstances be such a material obstruction of the ancient lights as to make it necessary for the Court of Chancery to interfere by injunction. He added that the Metropolitan Building Act is framed on the principle that the height of a building on the opposite side of a street should not exceed the breadth of the street, that is, if the street be 40 ft. wide, the height of the building on the opposite side must not exceed 40 ft.

This dictum did not meet every case, and we find in the City of London Brewery Co. *v.* Tennant (1873) 9 Ch. App. 212), Lord Shelbourne (C), said: "There is no positive rule of law upon the subject and that the circumstance that 45 degrees are left unobstructed is merely an element in the question of fact whether the access of light is unduly interfered with;" but, he added, "undoubtedly there is ground for saying that if the Legislature, when making general regulations as to buildings, considered that when new buildings are erected the light sufficient for the comfortable occupation of them will, as a general rule, be obtained if the buildings to be erected opposite to them have not a greater angular elevation than 45 degrees; the fact that 45 degrees of sky are left unobstructed may, under ordinary circumstances, be considered *prima facie* evidence that there is not likely to be material injury."

The law as interpreted to-day was finally settled in the celebrated case of Colls *v.* Home and Colonial Stores, Ltd., 1904, A.C. 179. In the House of Lords' judgment it was laid down, among other matters, that "the question to be decided is not how much light is left, but whether the plaintiff has been deprived of so much as to constitute an actionable nuisance."

What happens if a building having ancient lights is pulled down? You do not lose your rights if you can show that it is your intention to re-erect, and you can apply for a restraining injunction if the servient owner begins to build.

The same rule applies whether a building is pulled down or only windows blocked up; it must be proved that the dominant owner is not permanently abandoning his rights. A difficulty might arise if a purchaser were deceived by a blank wall opposite to a site which he had purchased for the purpose of a building.

Just one word in concluding this very brief sketch of the law of ancient lights, and that is, you cannot acquire by prescription ancient lights in a field or open yard; you must have a building with a roof and windows.

There is an Act called the "Public Authorities Protection Act" which should be borne in mind. The incidence is somewhat similar to the Act which protects the Crown.

I have given you in a somewhat sketchy manner an outline of the principles which govern the law relating to ancient lights, and if I have added ever so slightly to your knowledge I make no excuse for bringing the subject forward. As I said at the beginning, every engineer should know enough of law to keep him out of it.

It has been well said that an engineer must know something about everything and everything about something.

During the discussion on the paper the President suggested that some of the Irish cases might be quoted. The following may be of interest as they cover most of the points referred to in the foregoing notes:—

Mackey *v.* Scottish Widows' Socy.; Ir. Rep. 11 Equity 541—question of 45 degrees and on compensative illumination.

Manning *v.* Gresham Hotel; Ir. Rep. 1 Com. Law 125—amount of diminution that gives cause of action.

Maguire *v.* Grattan; Ir. Rep. 2 Equity 246—conflict of scientific evidence.

Judge *v.* Lowe; Ir. Rep. 7 Com. Law 291—effect of change of ownership.

Sankey *v.* Gunn; 28 Ir. Law Times Rep. 128.

O'Connor *v.* Walsh; 1908 1 Ir. Rep. 541—rights of badly lighted premises.

Black *v.* Scottish Temperance Life Ins. Co.—only reported in House of Lords in 42 Ir. Law Times Rep. 194.

Let us now apply ourselves to the scientific side of the question.

As we have only to consider daylight illumination this evening the scope of our labour is limited and I will deal with essentials. We may accept light as a wave motion in the æther, propagated in straight lines, and not further deal with the theory. With most sources of light the illuminant itself is visible; for example, the flame of a candle or lamp is visible because of the light coming from it, while a sheet of paper is visible because of the light reflected from it to the eye; even if the source of light be screened the paper is still visible because of the light reflected by the walls and ceiling of the room.

In like manner we have daylight when the sun is not above the horizon or when obscured by clouds. This is why the north side of a building is illuminated when the sun is in the south. Again, if you watch a cloud passing across the sun it will look black; but as it floats away to the north and the direct rays of the sun fall upon it, it assumes a silvery appearance, due to the sun's rays being irregularly reflected or diffused from its surface,

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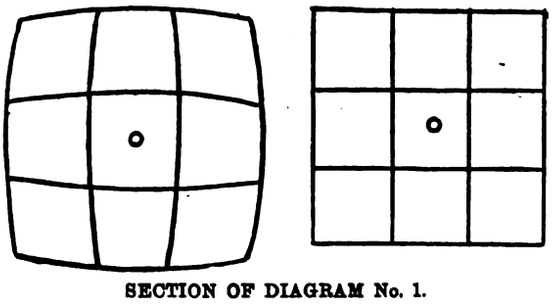
giving us the sensation of an illuminated object. Every object other than a luminous body is rendered visible by the light waves reflected from the object and reaching the eye.

The measurable sources of daylight may be roughly classed as follows:—(*a*) direct sunlight; (*b*) light diffused from cloud surfaces; (*c*) blue sky; (*d*) light diffused from floating particles of matter in suspension in the air.

Fortunately, we need not consider the relative values of these sources of light but only the effect produced by obstruction and the measurement of the same.

In cities and towns the question of the interference with or obstruction of light is of vital importance. When I first considered this question some few years ago I looked up all the authorities I could lay hands on dealing with it, and they are very few considering the importance of the subject.

Before I refer to these I will ask your attention for a few minutes while I explain the underlying fact on which the whole question depends. To get a clear conception of what happens when one looks into space through an opening in a wall, say a window, let us assume that the observer stands close to an ordinary window, viewed from a distance of say one foot; the vertical and horizontal sash bars will look distorted, *i.e.*, the centre frame will look nearly square and the others will appear as if they were closing in in every direction (see diagram No. 1),



SECTION OF DIAGRAM No. 1.

and if the window were of infinite dimensions the lines would vanish in all directions. Now, if instead of a window we assume that the observer's eye is the centre of a hollow sphere we get a projection of the sphere or rather a quadrant of the sphere as shown in diagram No. 1. As I have to refer to this diagram again I will pass on now.

In 1865 Robert Kerr published a paper on diffused light, and he takes the total value of the light on the projected quadrant as 100 and gives each of these spaces (see diagram No. 1) a value proportionate to its area. Hence any figure such as a building which intercepts a portion of the light can have measured value for the obstruction. This is the first record I can find of any effort to arrive at a numerical value for obstructions to light. Obviously the method was extremely cumbersome and required considerable care in the measurements. In 1902 H. B. Holesworth, M.I.C.E., published a paper in book form on "Obstruction to Light" in which he adopts the projected sphere method. He did not develop his theory in a practical and easily handled manner, but dealt more with shadows and so forth. His paper is, however, very well worth careful study. It was not until 1907 that I traced a complete analysis of the subject which was published in the United States of America by Professor O. H. Basquin, the title of the paper being "Daylight Illumination." He also adopts the projected sphere method, but has succeeded in fitting a very simple solution to a somewhat complex problem.

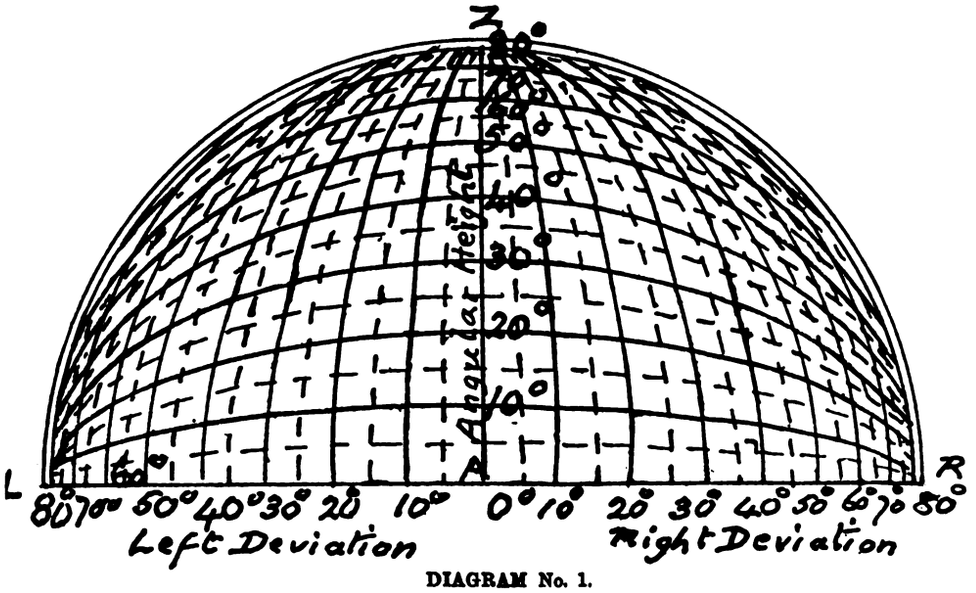


DIAGRAM No. 1.

Speaking generally, we have only three classes of lines to deal with in buildings, *i.e.*, vertical lines, horizontals parallel with the street, and horizontals at right angles to the street.

In diagram No. 2 let us assume for the present that there is no building opposite the observer's eye at point A. He can look up and down the street, across the street and above at the sky; in other words he is in the centre of a sphere of vision in which we are only interested in one quarter.

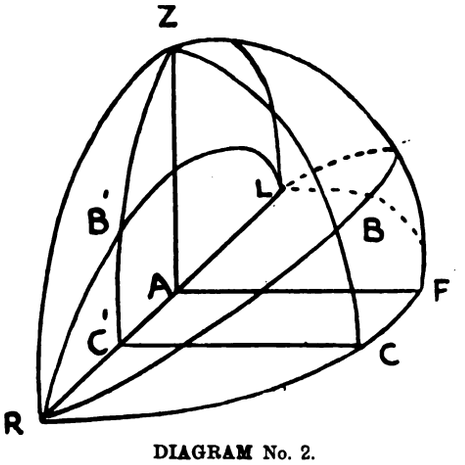


DIAGRAM No. 2.

The dimensions are obviously in this case of no importance whatever. For convenience, in the model on the table I am taking all the dimensions as equal to fifty centimetre radius or a diameter of one metre (in actual practice the scale used is ten centimetre radius). This simple construction enables us to fix the boundaries on the horizontal plane R right, L left, F front (object) at right angles to R, L, and Z (zenith) in the vertical plane,

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Now let us assume that at the opposite side of the street a hoarding of infinite length is erected which is represented by the line RBL. Clearly this raises the sky line to B and cuts off all below it, the projection of the line RBL on the window or vertical plane will be RB′L, hence the effect of the fence is to obscure the area RB′L and leave RZLB′ unobstructed. The effective illumination at the point A is, therefore, reduced in the proportion of the area RZL to RZLB′. Diagram No. 1, you will see, is only a development of this; the heights and distances are set off as angles on the sphere which correspond to vertical and horizontal lines in building.

We have seen that all parallel lines vanish if produced. Now, if we construct a hollow sphere, and set off the angles on the great circle in the horizontal plane (say every 10 degrees), and join these angles up to the vanishing point in the zenith on the vertical plane, we can project these lines on the vertical plane as seen in diagram No. 1. Again, if we lay off the angles on the meridian (opposite the eye) and join up the vanishing points R and L we can project the horizontal lines also as shown on diagram No. 1. We thus have a complete projection of the surface of the quadrant of the sphere set off in spaces each having a value of ten degrees in each direction.

Referring again to diagram No. 2 let us assume the fence is cut away at the point C; the effect on the vertical plane would be as shown at C′, and the fence would then obscure only the portion RC′B′, and the ratio of obscuration caused by the fence is as the area RB′C′ to area of the semi-circle RZL.

The next point is the effect of walls or fences at right angles to the fence we have been considering; these are not of the same general application, and I will not delay by going into them, although the results can be graphically represented quite easily, as I will show you presently.

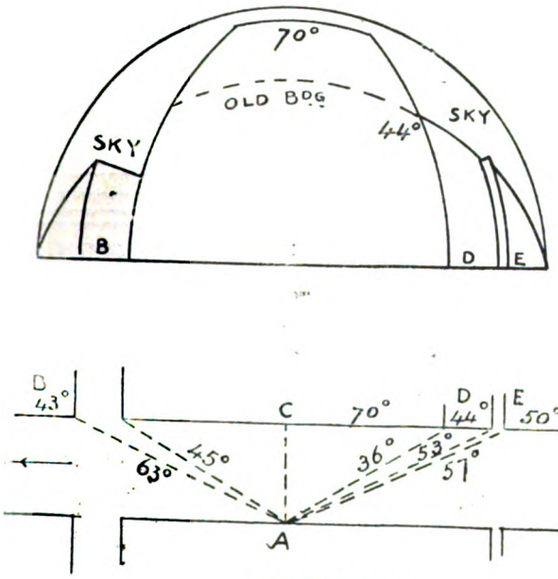


DIAGRAM No. 3.

The problem which we will now deal with is the commonest of all, *i.e.*, the increase of height of a building and its effect on the lighting of a house on the opposite side of a street, *i.e.*, presumably the dominant owner.

Sky area multiplied by sky brightness gives total illumination; therefore any increase or diminution in sky area must directly affect total illumination.

The diagram No. 1 is the working diagram, and, as stated above, is always used on the scale of 10 centimetres radius, and with this any problem can be worked out. Diagram No. 3 represents a case in point. Where the building C is about to be raised a few storeys, and the owners of the opposite building—*i.e.*, the dominant owners—want to know how they will be affected, the procedure is as follows: Set off on plan the angles of the buildings at the opposite side of the street and the angular heights of same, plot them on the chart as shown in diagram No. 3, and you get at once the graphical representation of the relative sky areas, and therefore the actual variation in illumination; in this case the planimeter gives the greater area as 30 square centimetres, the radius being 10 centimetres, the area in square radii

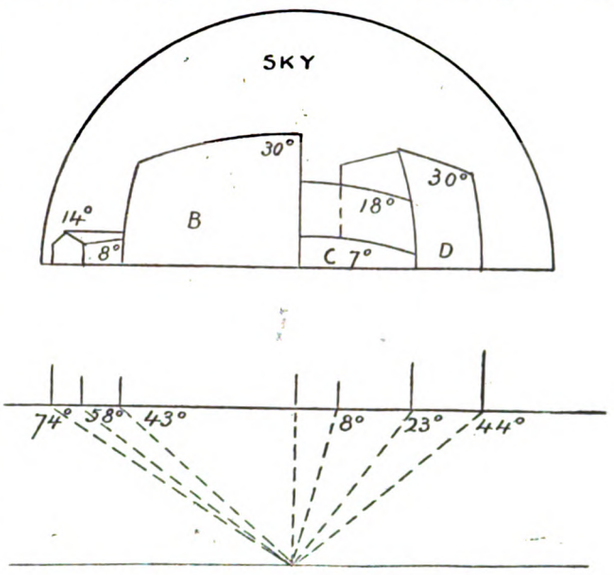


DIAGRAM No. 4.

will be 3 × 250 foot candles (*i.e.*, sky brightness), the mean illumination at A will be 75 foot candles. The reduced sky area after the building C is raised will be only .19 square radii by 250 candlefoot—47 foot candles, showing a decrease in illumination of nearly 40 per cent.

This is an actual case, and I give it as an example of the extreme injury caused to the dominant owner A.

Again in the case shown in diagram No. 4 we have a building erected over an existing wall. Here the injury to the dominant owner only amounted to 6.2 per cent. of the light proceeding to the point A.

It is important when setting off the vertical angles on the chart to make sure that the zero point is on the horizontal plane in front of the eye, and for this reason a theodolite or clinometer is preferable to a sextant, that you can make a mistake with a sextant and you cannot with either of the other instruments referred to.

The measurement of horizontal angles can be made in several ways, sextant, prismatic compass or theodolite.

It is futile to depend upon the eye as a measuring instrument, and in this lies the extraordinary conflict of evidence between experts in ancient lights cases. Each observer forms his own judgment, which is given in good faith, but always hopelessly wrong, because the eye is not a scientific instrument, and my object in this paper has been to show that these errors can be eliminated and a definite value given to obstruction.

Professor Silvanus Thompson, at a meeting of the Congress Educationists in October 1913, said: "At the very best the human eye is a bad photometer. Its automatic adjustment, which closes the pupil in the presence of a flood of light and opens it in twilight—a most valuable provision of nature—works against it as a measuring instrument. And Fechner's law of psycho-physiology concerning the numerical relation between a stimulus and its resultant sensation, shows, once and for all, the impossibility of setting up the eye as a judge of photometric values. The one and only thing that the eye can do in this regard, and it is the principle of every photometer, is to draw a judgment as to the equality or non-equality of the illuminations on two adjacent patches of space in the field of vision."

In conclusion, I do not wish to claim this system of measurement, but having adopted it and finding it satis-

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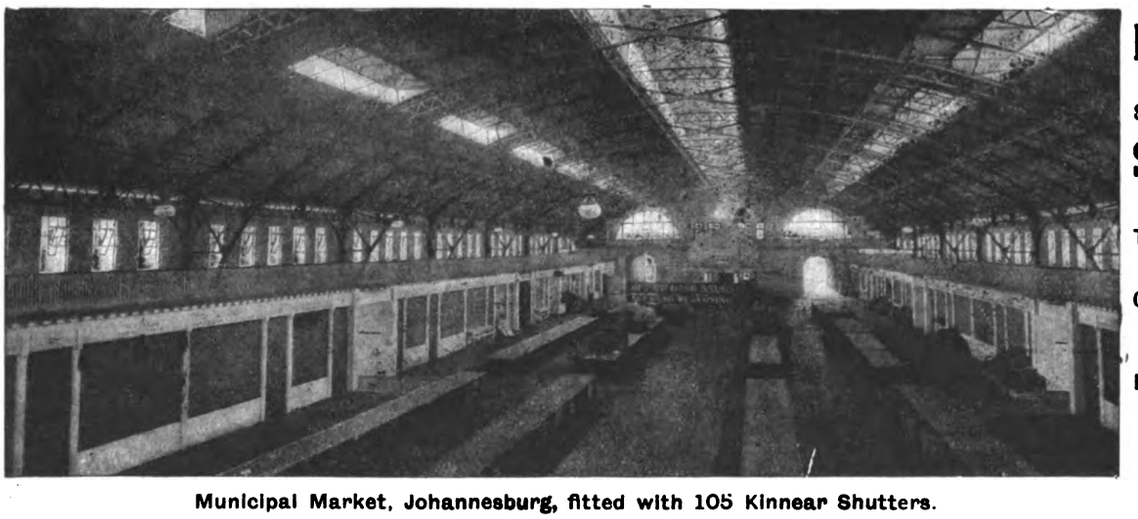
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factory, I thought it would be of sufficient interest to the members to warrant my bringing it before you, and I beg to acknowledge my indebtedness to the various authors quoted.

NOTES ON BOOKS.

"Table of Compound Interest at ½ per Cent. and of Antilogarithms to base 1.00125." By Joseph M. Stuckey, M.A., &c. (London: George Allen & Unwin, Ltd. Price 21*s.* net.)

THE work now lying open before us is one rather for actuaries and men of their class than for architects. Even so, it is obvious to any person of intelligence that Mr. Stuckey has devoted untold hours of labour to the compilation of this useful book. We regard as public benefactors all those who thus evince their readiness to do spade-work. The Introduction is a necessary portion of the contents, in this differing from the customary introduction: "This Table was originally constructed to show the value of $(1.00125)^n$ from + 0 to + 1000 to 18 figures"—in other words, the calculation of the value of **a** (Alpha). By this means we obtain the value of £1 accumulated or discounted at a compound interest of ½ per cent. for any number of years (not exceeding 1,000) to eighteen figures. Subsequently the method employed was to construct first backward (the Minus Table) and then forward (the Plus Table), and the logarithms, &c., are now worked out to sixty places of decimals.

Obviously it would require very critical examination to establish the accuracy of Mr. Stuckey's labours; we notice a slight error on page 12, where the right-hand figure of the summation should be seven in place of eight; but a general observation can but serve to gain our appreciation for this very useful compilation.

"The Call of Belgium and other War Articles." By John A. Randolph. London: "Architect" Office. 1s. net.)

IT would not become us to praise too highly this collection of articles reprinted from our pages, as their inclusion therein is sufficient evidence of our opinion of their interest and value. We feel sure, however, that many of our readers and the public generally will be glad to have in collected form these valuable records of many remarkable Belgian churches, almost unknown to Englishmen until they became the targets for the artillerists of the Boches. The beautiful steeples of Woesten, Boesinghe, Rumbeke, Vlamertinghe, Elverdinghe and others must have been a revelation to our young architect friends in the firing line.

"The Architects' and Surveyors' Diary for 1916." (London: Waterlow Bros. & Layton, Ltd. 3*s.* 6*d.* and 6*s.* according to diary space and binding.)

IN addition to the usual features of a first class diary, this now well-known and appreciated recorder is of special value to our professional readers by its inclusion of the legislative enactments more particularly affecting their work contained in the Towns Improvement Clauses Act, 1847; London Building Act, 1894; London Building (Amendment) Act, 1998; London Building Acts (Amendment) Act, 1905; L.C.C. General Powers Acts amending the London Building Act, 1894; Public Health Acts Amendment Act, 1907; Housing and Town Planning Act, 1909; L.C.C. Superintending Architect's Department. Regulations and By-laws. There is also a collection of prices quoted by many manufacturers of building materials, and a remarkable compendium of much useful information for architects and surveyors.

MR. D. Y. CAMERON, A.R.A., has designed a war seal for the Stirlingshire Work Depot, which is being sold at 1*d.* each to raise funds for comforts for the Argyll and Sutherland Highlanders. It shows a characteristic little drawing of Stirling Castle.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

The Housing Problem.

SIR,—Will you permit me to open the New Year by inaugurating a discussion in your columns on this important subject, so impartially initiated by you in your leader of November 19 last?

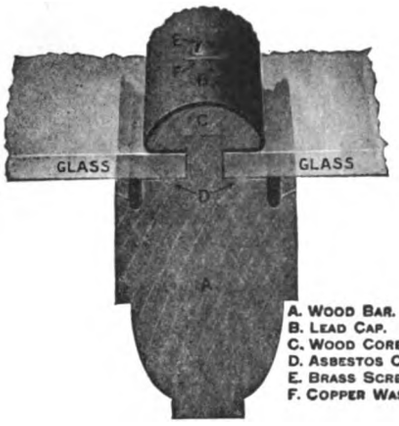
First, I must object to your adverb when you state "that many of the Jerry or speculating builders have 'unfortunately' been driven into other trades in their ineffectual struggle against Governmental action towards owners of land." If the worst of the Finance Act, 1909, were killing the Jerry builder, most people, and all architects and quantity surveyors, would welcome it.

Is it not, too, some exaggeration to say that "some speculating builders pay thousands of pounds weekly in wages," equal to, say, £150,000 a year, or if the wage bill for a building were £150, it equals a thousand houses built by one firm in one year? If so, I am glad they are killed.

Your article deals with the Garden City movement, and everyone would like to see this enlarged upon; but does it reach the class to be catered for? I think everyone agrees that after the war the interest on money will be permanently increased; also the cost of building (along with every other commodity) will be raised not only with wages, but with the demand for every class of building material to make good the wastage of war and the decay in the natural growth of buildings since 1909, so that it will be difficult to build a garden-city house, with land, roads, gas, water, and drains, to let at 10*s.* a week. If a good workman is earning £2 a week he is no more justified in living in a house at 10*s.* a week than another man with £400 a year is of living in a house of £100 rental; but even if he will pay this rent the man earning 40*s.* a week need not be looked after. He can save sufficient money to build his own dwelling with the help of his Building Society, but the casual labourer earning from nil to 20*s.* a week must be housed. This is a duty on citizenship. There are three courses open—(1) he must pay higher rents to attract capital in preference to investment in war loans; (2) the Corporation may build, but if Corporations build they should be restricted from letting houses at a rent insufficient to pay interest on the cost, for one must remember that Corporations can borrow money at 2 per cent. less than most private owners, and it is unfairly pauperising people for a Corporation to build houses worth 6*s.* rent and let them for 4*s.* They have just as much right to build houses worth £60 rent and let them for £40, and to take the difference from the rates, and the law should be so altered to enforce such restrictions as interfering with private trade; or (3) there must be a drastic alteration in building by-laws, and I think, Sir, this is the most feasible principle. If you make a survey of the houses of any city or large town which have been built twenty-five or thirty years, these houses are out of date. Not only that, but the district is out of date for the class of house. Yet in accordance with the building by-laws, these houses are so well built that they will last for another hundred years or more, and it is impossible to ask the owner to scrap them. Still more impossible is it to show him that it is a profitable investment to scrap them and build something else, as the rent has never been sufficient to pay both interest and a sinking fund. Yet in any other trade they would have been scrapped or remodelled years ago. Then even if such solidity is necessitated, fashions change. Why may I not build a house with rooms 6 feet 6 inches high if I want? If I can't let it, I am the loser; if I can let it, it is because somebody else wants it.

No doubt there will be some wastage during the war, but in every previous European war refugees have come to England, and many of them have settled here. Everyone wants the wage-earner comfortably housed in a decent, dry house (where practicable, with a bath); but unless he will pay a much higher rent, or induce the actual builder to continue the good lesson taught to the munition worker of doubling his output, it resolves itself either into Corporations building all houses, at the cost of the ratepayers, or reducing building restrictions radically—and your article reminds us very seasonably that "local authorities should

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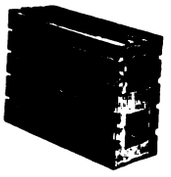
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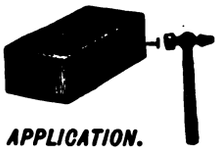
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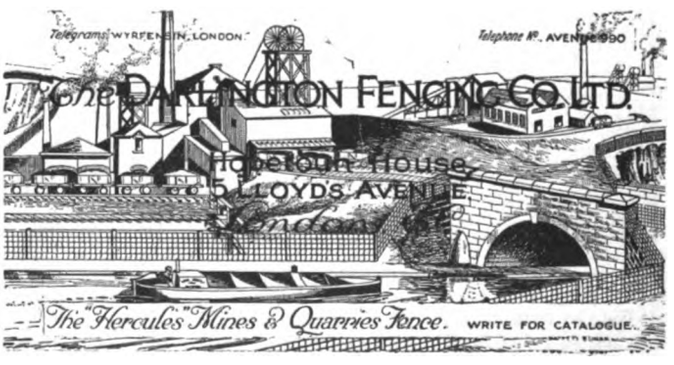
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be content, and wisely content, to encourage others to build houses."—Yours, &c., W. H. WOOD.

Queen Square House, Leeds: January 1, 1916.

Arrangements for Convalescent Officers.

SIR,—The Committee of the Public Schools Alpine Sports Club have accepted an offer made to them by the Board of the Palace Hotel, Montana (Switzerland), Ltd., to place that hotel at their disposal, rent free, during the present winter season, for the reception of convalescent officers. It is intended to follow this shortly with arrangements for Great Britain. A charge will be made to each officer of 6*s.* 6*d.* per day to cover cost of food and other expenses. Friends who accompany them will pay 8*s.* per day. Any balance remaining over after defraying the cost of food, wages, and other working expenses will be devoted by the Committee to defraying the expenses of necessitous officers.

Montana-sur-Sierre enjoys the highest record for winter sunshine of any Swiss mountain resort—7¾ hours of possible sunshine on the shortest day.

Any convalescent officers, and especially those suffering from bronchitis, pneumonia, and general debility and overstrain, are invited to send a statement of their case and the dates within which they would like to avail themselves of this arrangement to the Honorary Secretary of the Sub-Committee, Lady Waterlow, 1 Maresfield Gardens, Hampstead, N.W.—Yours, &c., LYTTON,

Chairman of the Sub-Committee.

3 Upper Woburn Place, Tavistock Square,
London, W.C.: January 3, 1916.

The Surveyors' Institution.

SIR,—You will see from the enclosed notice that the next ordinary general meeting of the Institution will take place at 5 P.M. on the 10th prox. instead of 8 P.M. This change was made for the convenience of members who do not wish to stay in town while the present war conditions as to dark streets and late trains prevail. I should be greatly obliged if this could be made known through the agency of your wide circulation.—Yours, &c.,

A. GODDARD, Secretary.

12 Great George Street, Westminster, S.W.:
December 29, 1915.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

CHESHIRE.

Birkenhead.—Warehouse and mill: extension for Messrs. Spillers & Bakers, Ltd.

CORNWALL.

Padstow.—Post Office, Duke Street.

St. Germans.—Bungalow, Anderton, for Miss Llewellin.

DERBYSHIRE.

Chesterfield.—Bungalow, Spital Lane, for Mr. T. Revill.
House, Ashgate Road, for Mr. Watts.
Two houses, Derby Road, for Mr. Groves (of Clapwell Colliery).
Two houses, Halsand Road, for Mr. W. Hoole; also Two houses, Mansfield Road.

Pleasley Hill.—Motor garage, Mansfield Road, for Mr. J. Clarke.

DURHAM.

Blackhill.—Baptist Church, Derwent Street. Messrs. Davison & Parr (of Newcastle), architects.

Coxhoe.—Farmhouse, Pescot Hall: addition for the Steetley Lime Co.

ESSEX.

Chelmsford.—Hospital, London Road: additions for the British Red Cross Society.
No. 187 Moulsham Street: additions for Mr. Rolfe.

HERTFORDSHIRE.

Watford.—Business premises, High Street, for Mr. Timms.
House, Leavesden Road, for Mr. Pearce.
Four houses, Windsor Road. Messrs. Bracey & Clark, builders, 100 Cecil Street.

LANCASHIRE.

Atherton.—Motor garage, &c., for the Lee Spinning Co., Ltd.

Blackpool.—Four houses, Grange Road. Mr. E. Mason, builder, Broughton Avenue.

LINCOLNSHIRE.

Grantham.—Four houses, Huntingtower Road, for Mr. H. H. Bowler.

Ruskington.—Dairy, Manor Street, for Mr. W. H. Silson.

MIDDLESEX.

Hillingdon East.—House, Kingston Lane, for S. H. Briant.

Ruislip.—Four houses, Ickenham Road, for Mr. A. Bush.

SOMERSET.

Chilcompton.—Stables, for Mr. Bradbury.

Midsomer Norton.—Warehouse, Rock Road, for the N. Somerset Co-operative Agricultural Society.

STAFFORDSHIRE.

Chase Terrace.—Two houses, Cross Street, for Messrs. Churchill Bros.
House, Thorpe Street: additions for Mrs. Allsopp.

Chasetown.—House: additions for Dr. Horton.

Coseley.—Works, Hallgreen Street: extensions for Messrs. Shorthose, Lee & Co.

SURREY.

Barnes.—Flats, Riverview Gardens, for Messrs. Pappiatt & Cooper.
House, Bracien Gardens, for Messrs. Hooper Bros.
House, Ferry Road, for Mr. A. Harvey.
Picturedrome, Sheen Lane: additions for Mr. R. L. Rowell.

Croydon.—Eight houses, Craigen Avenue, for Mr. P. Richardson.
No. 37 Central Hill: conversion into flats for Mr. C. Roberts.
House, Pollards Hill North, for Mr. L. Brown.

Kingston-on-Thames.—Ninety-eight houses (£23,500) for U.D.C.
Tiffin Council school, Denmark Road.

WARWICKSHIRE.

Birmingham.—Factory. Messrs. Buckland, Haywood & Farmer, FF.R.I.B.A., architects, Norwich Union Chambers, Congreve Street.

Coventry.—Six hundred houses, Wyken, for the Corporation.

Leamington.—The Warneford and S. Warwickshire Hospital: addition (£900). Mr. F. J. Cundall, architect, 4 Parade.

WORCESTERSHIRE.

Norton.—Cottage Homes: addition (£2,600).

YORKSHIRE.

Aldwark.—Council school.

Harrogate.—House, Regent Mount, for Mr. J. Chippindale.
House, Harcourt Road, for Mr. S. Stead.
Motor garage, rear of Regent Parade, for the Harrogate and District Co-operative Society.
Warehouse, Regent Parade, for Messrs. George Ward, Ltd.

Huddersfield.—Ninety-seven workmen's dwellings.

Ilkley.—P.M. Church: Sunday schools. Mr. W. G. Smithson, A.R.I.B.A., architect, 2 Basinghall Square, Leeds.

Scarborough.—Wesleyan Chapel, Queen Street: rebuilding (£8,000). Messrs. Withers & Meredith, FF.R.I.B.A., architects, 50 Cannon Street, London.

Seamer.—Auction Mart: additions. Mr. C. H. Channon, F.R.I.B.A., architect, Market Street, Malton.

WALES.

Barmouth (near).—Bungalow, for Mrs. Wood.

Penyrheol.—Mission church.

Rhos-on-Sea.—Two houses, the Promenade, for Miss Byland.

SCOTLAND.

Dundee.—Cinematograph theatre, Hilltown, for Mr. R. Pennycook.

Glasgow.—Secondary school, Hillhead. Mr. M. Adam, architect, 160 Hope Street.

IRELAND.

Kenmare.—Rectory. Mr. G. A. E. Hickson, architect, 23 Denny Street, Tralee.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Friday, January 14.

Town-Planning Institute : Paper entitled "Open Spaces and Town-Planning Schemes," by Mr. Lawrence W. Chubb, at 6 P.M.

Monday, January 17.

Victoria and Albert Museum : University Extension Lecture XIII., on "German Renaissance Architecture (1500-1900)," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Wednesday, January 19.

Royal Society of Arts : Paper entitled "The Common Lands of London—the Story of their Preservation," by Mr. Lawrence W. Chubb, at 4.30 P.M.

Thursday, January 20.

British Museum : University Extension Lecture XIV., on "Roman Architecture (B.C. 100—A.D. 300)," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

SCOTTISH NATIONAL BUILDING CODE.

IN the Scottish daily papers there has appeared an evidently inspired notice of what is termed an "interesting" or "important" piece of constructive work in the direction of creating conditions favourable to the resumption and expansion of trade after the war has been achieved by the establishment of a national building code for Scotland. The object of the code, which has just been published by His Majesty's Stationery Office, is to ensure uniformity of practice in entering into and carrying out building works from the preparation of the schedules of quantities on which the contractor's tender is based to the payment of the final balance.

It is also stated that it is doubtful if anything quite so ambitious in regard to building has been previously attempted on a national scale, and Scotland is believed to be the first country in which it has been done. Up to the present practices have been widely divergent, Edinburgh, Glasgow, Dundee, and Aberdeen each having its own local rules and customs, a state of affairs which has given rise to much confusion on the part of building owners and contractors who conduct business in all of these cities.

We have examined this Scottish national building code, which appears in the form of "Regulations for entering into and carrying out contracts for building works in Scotland, together with general conditions of contract and form of contract." Sir G. R. Askwith signs the preface, which relates that, at a meeting held at Glasgow on February 18, 1915, attended by representatives of the various Architectural Societies of Scotland, the Faculty of Surveyors of Scotland, the Scottish National Building Trades Federation, and other trades, the following resolutions were agreed to:—That a National Code for Building Works in Scotland be established; that the architects and each section send in writing to the Chairman (Sir G. R. Askwith) on or before March 31, 1915, any amendment proposed to the draft regulations of contract already submitted by the Chairman; that such regulations and proposed amendments be considered at first meetings, and, failing agreement, be finally settled by the Chairman. Such meetings were held on June 10 and 30, and at a further meeting held on October 21, at which representatives of various Government, municipal, and local authorities were present. As a result of these deliberations the Scottish National Building Code appears.

In an explanatory note by Sir G. R. Askwith, we are told that these general conditions of contract for ordinary use have been drafted upon the basis that it is essential to provide (1) that the drawings and specification shall represent the work to be contracted for, and shall not be taken, as has been suggested in the course of the discussion, "merely as showing what is at present contemplated and intended, subject to such modifications and alterations as may be hereafter made"; and (2) that the sum which shall become due to the contractor, on completing the works embodied in such drawings and specification, shall be fixed, as far as practicable, before the contract is entered into.

The ambitious attempt on a national scale in which it is claimed that Scotland leads the way, is therefore an attempt to regularise in the northern part of the kingdom what is, and has been from time immemorial, the universal practice in England. Here the drawings and specification, from the earliest times in which such documents have been in use to the present, have always been the basis of the contract, and the contract sum has always been the precise amount to be paid to the contractor for the exact amount of labour and material included in the carrying-out of the work shown in the drawings and specification—no more and no less.

It should be remembered that the use of bills of quantities supplied to tenderers as on behalf of and from the employer is a comparatively modern practice, dating from the time of the estimates for the present buildings of the Houses of Parliament. Previously to that time every builder took out his own quantities and made his own calculations, either by himself or a deputy, for his estimate, but the magnitude of the contract in the case of the Parliament buildings suggested the desirability of a change, and the profession of a quantity surveyor was established. Even then some of the older builders up to forty or fifty years ago, when they received bills of quantities, often ignored them and made their own rough-and-ready estimates from the drawings.

Of recent years there has arisen a practice of making the quantities part of the contract, on equal footing, presumptively, with the drawings and specification. There can be no doubt that this custom has arisen from the preparation of bills of quantities by architects. The efficient quantity surveyor was always prepared to stand by the accuracy of his quantities and to shoulder the legal responsibility for that accuracy both to the employer and the contractor, and few quantity surveyors of large practice have escaped being mulcted for mistakes which are possible in the most carefully conducted office.

From the note by Sir G. R. Askwith we learn that in Scotland it is now customary for the contractor's tender to be based on a schedule of quantities which does not necessarily represent the work to be performed, and is not even an accurate statement of the value of the work described in the drawings and specification. Consequently the job has to be measured up from top to bottom after completion, and quantity surveyors in Scotland are called measurers. This can only be the result either of faulty drawings and specifications prepared by the architect or of inaccurate "schedules of quantities" put forward by the "measurer." This is unfair both to the employer, who cannot know exactly what his building will

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cost, and to the contractor, whose tender, as Sir G. R. Askwith points out, must be based largely on speculation in view of current methods of trading, which compel contractors to order material from merchants in definite quantities or to be supplied during a stated period, consequently he is placed in the dilemma either of inflating his prices to meet any possible rise in market prices before he is in a position to make provision for material to be supplied by him, or to take the risk of possible loss. We quite agree with the dictum of Sir G. R. Askwith that it is in the interests of employers and of reputable contractors to eliminate, as far as possible, such speculation and to have the work priced on the basis of definite rather than indefinite factors. No doubt, also, the existence of definite factors, which these general conditions are directed to establish, should generally render unnecessary the practice of remeasurement in the completed work.

Matters in Scotland must have gone very far in the direction of what we may fairly call incompetent work when such a state of affairs requires remedy. The so-called "schedules of quantities" must be very far removed indeed from the standard of a bill of quantities prepared by a qualified and competent English quantity surveyor. This is the secret of the whole trouble, that the measurer's "schedule" is not an accurate bill of quantities.

The practice of measuring up a building entirely at completion is not unknown in England. It has been done in some large contracts for the sake of justly estimating the amount of the certificates on account, and also in those cases where the contract is based on a schedule of prices. A very different thing, be it observed, to a schedule of quantities. The proper method of contracting on a schedule of prices is, as practised in some of our Government departments, to supply the tenderers with a standard-priced schedule, from which they can make their offer by adding or deducting a percentage.

For general practice this is not a good method, because it does not give an employer the advantage of utilising the ability of some one contractor to supply a particular material or class of labour at a cheaper rate than his competitors. It is seldom that the lowest tender is at a definite percentage on every item below the highest, and probably more contracts are lost and won by differences in the excavator's bill than in any other.

How does the Scottish National Building Code propose to effect its object? By the adoption of the very simple condition that the contract is to be "in accordance with the true intent and meaning" of the signed drawings, specifications, and conditions of contract. Thus we have in England a warning against allowing the bills of quantities to be part of the contract. Such procedure will inevitably lead to the production of slip-shod and inaccurate quantities, where it has not been already adopted to cover such incompetent work, and these inaccurate quantities will also inevitably entail complete measuring up of the building at completion. The whole system becomes a premium on incompetent quantity surveying.

NOTES AND COMMENTS.

By the death of Lord Burnham, journalism loses one of its most pronounced leaders. As a proprietor he made the "Daily Telegraph" a paper appreciated and esteemed by the public, and greatly increased its circle of readers. But beyond this, he ever lent support to philanthropic schemes, and through the medium of the "Daily Telegraph" has probably done more for the cause of public sympathy and charity than any other newspaper proprietor of his time.

The latest phase in the housing question appears to be the Glasgow movement resulting in the formation of a Scottish National Labour Housing Association, whose object is to further a scheme under which it is proposed that the State should make grants of money, free of interest, to local authorities for the erection of houses for the people. The success which has attended the agitation, most virulent in Glasgow, against the raising of rents has apparently emboldened the Glasgow Labour Party Housing Committee to open its mouth a bit wider. The proposal may at first glance seem to savour of Socialism, but when we come to consider it calmly, does not appear to be unreasonable. Of the shortage of houses, especially for the poorer classes of the community, there can be no question. The causes which have produced this shortage are to a very large extent, if not entirely, State-initiated.

Firstly, there has been set up by the State a standard of housing accommodation, hygienically desirable no doubt, which has raised the cost of building; secondly, the State financial policy, dating more particularly from the year 1909, has diverted—to put it mildly—capital from investment in working-class house property, and so prevented the builders of such property from obtaining their necessary financial backing. Both these causes have operated before the war, and had already reduced house-building to a very low state of activity, which has been deepened to complete stagnation by the war—a State concern. It is therefore the State rather than the parish or borough which ought to find the remedy for the present intolerable condition of housing.

Whether this should be by lending the money, free of interest, is another question, and whether the money should be lent to local authorities is still more questionable. We should rather advocate, as we have before hinted, that the State should finance private enterprise and reduce the standard, now raised to an unnecessarily high level by existing by-laws and regulations, leaving the local authorities to supervise the work of private enterprise, whether by speculating builders or by co-operative tenant companies.

The present time is not favourable for such schemes as that of the Scottish National Labour Housing Association, or of the agitation which the Manchester Tenants' Defence Association proposes to initiate. The shortage of housing accommodation is no doubt acute, but it is less acute in Great Britain than in Belgium, in Northern France, in Serbia, and in Poland. The Government should not be hampered in any way when they take necessary measures to end the war quickly. They are slow enough in all conscience, and do not need any brake on what little energy they do manifest. Hence we think the action of the Manchester Tenants' Defence Association is untimely.

The Association now proposes to agitate for a remedy for the house famine and to stir up a national agitation, so that the Treasury may be induced to remove the prohibition upon municipal building schemes. The same organisations which carried on the last agitation—the Trades and Labour Council, the Co-operative Union, the Women's Co-operative Guild, the Labour party, and the Independent Labour party—will combine in the new enterprise, and the first step will probably be to send a deputation to make representations to the Manchester Sanitary Committee. There is a good deal of force in the contention urged by the Association that the Treasury has, for reasons of national economy, put a veto on municipal building, and in the case of Manchester this veto has prevented the carrying out of schemes which the Council has already approved. These municipal projects were not on a scale large enough to provide anything like a remedy for the shortage of houses, but they would have done something, and the leading minds in the Tenants' Defence Association feel the necessity for getting the corporations to begin to tackle the problem, however inadequate their first measures may be. It is represented that, at all events for some years to come, there will be no private enterprise in the building of artisans' houses, and that, as the need for more houses steadily grows, the Corporation must build in the interests of the comfort and health of the community. As we have already indicated, we believe that better results would follow the

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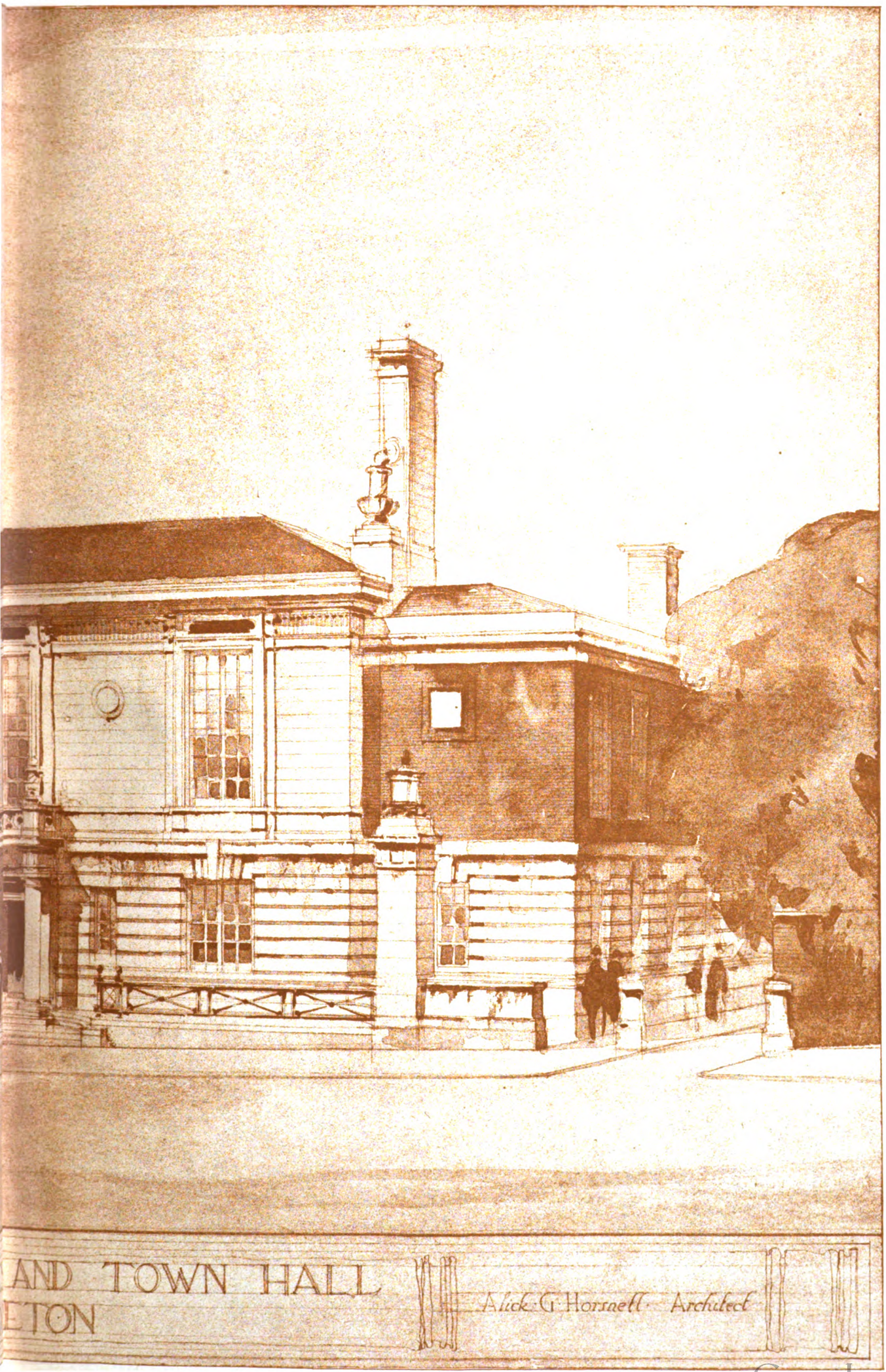
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(Royal Academy Exhibition, 1915.)

Jan 14th 1916



AND TOWN HALL
ETON

Alick G. Horsnell Architect

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PONDS FARM, SEER

MR. FRANK PECK, F.R.I.

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Jan. 14th 1916.



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GREEN, BEACONSFIELD.

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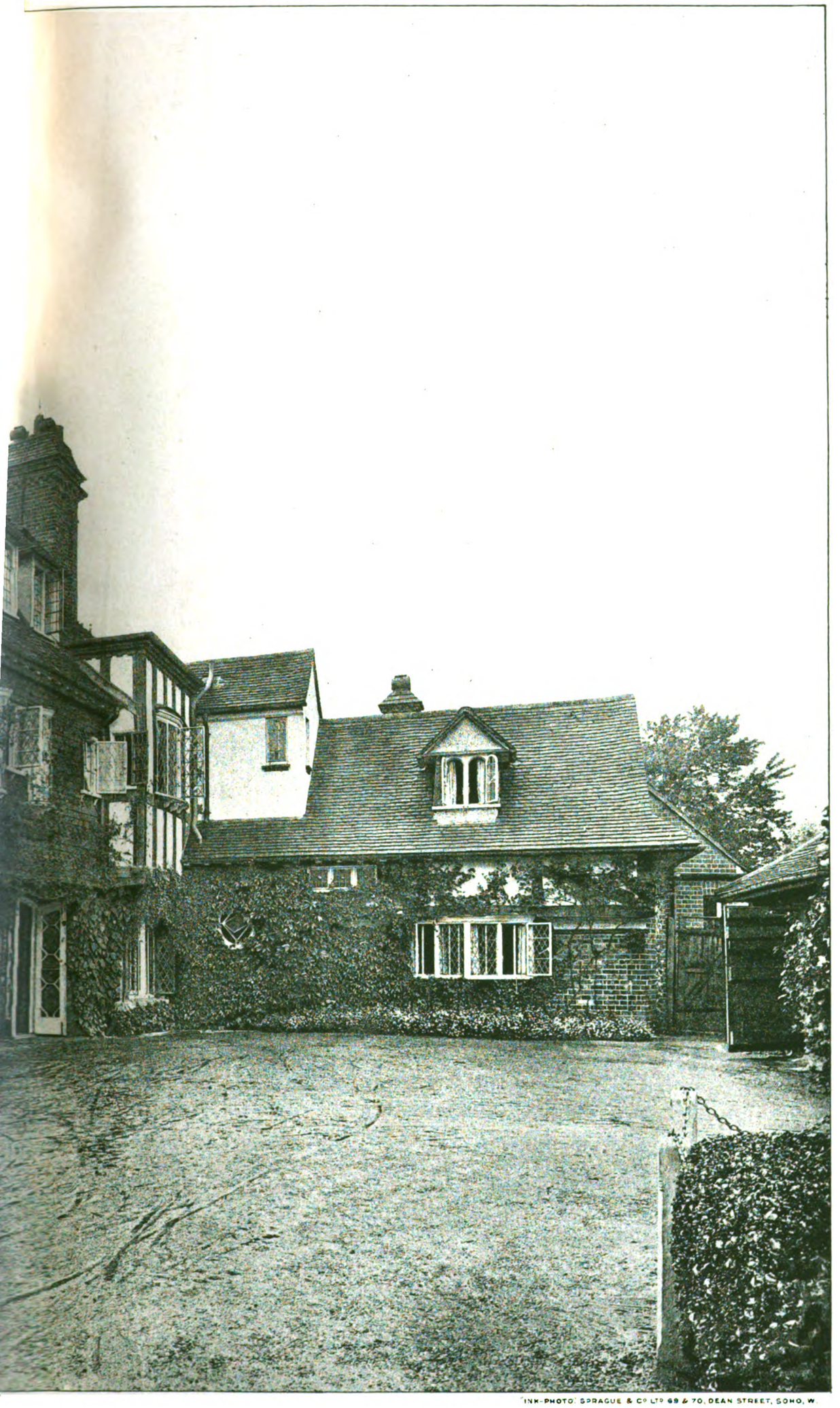
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PONDS FARM, SEER

Mr. FRANK PECK, F.R.

Jan: 14th 1916.



"INK-PHOTO." SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.

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Architect.

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encouragement of private enterprise than by handing over the provision of housing entirely to municipal bodies.

Rotherham Borough Council has, in our opinion, taken the right course in the present conditions of housing by deferring certain demolition orders recommended by their Housing Committee. As one councillor observed—any house is better than none at all. This is no time for demolition orders. They simply mean more overcrowding and cumulatively more demolition, which if logically pursued would result in their being no houses at all for the weekly wage-earner.

In Falmouth parish church there has been unveiled and dedicated a memorial tablet erected by the Royal British Colonial Society of Artists to the memory of William Ayerst Ingram, sometime president of the society. The memorial, designed by Mr. Alfred Drury, R.A., on the north wall of the church, in the Lady chapel, is in the form of head and shoulders in profile, modelled in clay and cast in bronze, and is framed in dark green marble, the dimensions of the bas relief being about 18 inches by 12 inches. Beneath the figure is the inscription in gilt letters:—

"To the memory of William Ayerst Ingram, born April 27, 1855, died March 20, 1913. Founder and for twenty-six years president of the Royal British Colonial Society of Artists. This tablet is erected by the members in grateful recognition of his devoted service. 'I will walk before the Lord in the land of the living.'"

During the ceremony Mr. T. C. Gotch, president of the society, gave an address in which he said the design and workmanship of the tablet were the gift of Alfred Drury, the sculptor, and it was fitting that this memorial should be placed, almost within sound of the sea, in the parish church of the town in which Mr. Ingram lived so long. Thus did they hope to keep his memory green; and if in course of time the recollection of his personality passed away there was a witness to the service which he, whom they loved and admired, rendered on behalf of the artists and the arts of the Empire. In 1887 the society, over which he presided until his death, was founded. It was first known as the Anglo-Australian Society of Artists. Two years later the late Queen Victoria gave the society the title and style of Royal, and in 1904, the scope of the society's work being enlarged, its title was changed by the authorisation of the late King Edward to that which it now bears. On his accession King George was graciously pleased to signify his wish to become patron of the society. It was his (Mr. Gotch's) fortune to meet Mr. Ingram before any of these events took place and to form a lifelong friendship. He knew what he hoped, what he achieved, and, in some measure, he knew the persistent and untiring work he did for the society. He looked the part he filled—a man of distinction and address, full of nervous energy, militant, urbane. In council he was an able leader, an attentive listener, open to hear the other side and modify his views, or, if he held to his opinion, to hold it without a tinge of bitterness for those from whom he differed. He had in high degree imagination combined with practical common sense; a dreamer indeed, but one who could consider and take the actual steps necessary to the realisation of his dream. Of such were the true organisers; their quality, imagination, not added to, but multiplied by common sense. He was an excellent host, a good talker, a sympathetic listener, a gay companion, a child amongst children, a bonnie fighter, and a good friend to a friend in need without any distinction of class. Three things he did outside his art. The first was to found and lead the society which erected that tablet; the second was to initiate, to raise the funds for, and, with the help of others, to establish the Boys' Club at Falmouth; the third was to take a lead amongst those who founded the Imperial Arts League. One of the dearest wishes of his later years was to raise a maintenance fund for this society, not for the direct benefit of the members, but that the Imperial work of the society might be fully carried out. He was taken from them before this could be accomplished. As a fitting memorial, and in remembrance of his wish, many of his friends had subscribed a sum as a beginning of that which he desired to raise. This sum, the "Ingram Memorial Fund," has been handed to the society to be kept perpetually separate from any other fund, and the subscribers to the fund had been invited to be present that day to witness this other memorial which the society erected. Mr. Ingram's work as a painter of the sea spoke for itself. Time will show the place it was to hold. In later years it entered a new phase—finer, fuller, and more personal than the work, always sane and sound, that characterised his earlier years. The eager hand was still, the voice was silent, the dreams but half fulfilled. Happy was he who had accomplished such sterling work as that of William Ayerst Ingram.

Organisation rather than individualism is one of the necessities of the age in which we live, and hence we are glad to learn that a course of lectures on professional organisation will be given at the London School of Economics and Political Science, by Mrs. Sidney Webb, D.Litt., and Mr. F. H. Hayward, D.Litt., M.A., B.Sc., commencing January 17. Mrs. Webb will include amongst her subjects Organisation of the Engineering Profession, of the Architectural Profession and of Manual Workers in the Trade Unions, so that her lectures should be interesting to many of our readers.

ILLUSTRATIONS.

MUNICIPAL OFFICES AND TOWN HALL, MIDDLETON.

OUR illustration reproduces the drawing exhibited in the Royal Academy showing Mr. Alick Horsnell's successful competition design for Middleton Town Hall. The working drawing and details have been prepared, but the erection of the building has been postponed till after the war. In the meantime Mr. Horsnell has been at the Front as 2nd Lieutenant in the 6th Suffolks, and has been sent home wounded in the thigh. He has, however, happily recovered and is about to go out again.

PONDS FARM, SEER GREEN, BEACONSFIELD.

THIS building shows the high level to which our modern domestic architecture has attained in the hands of the younger generation of present-day English architects.

THE R.I.B.A. Council have decided to remit the subscriptions and contributions due on January 1, 1916, of all members and licentiates serving with the Forces who make a written application for such remission before July 1, 1916.

THE committee of the Birmingham Archæological Society have passed a resolution receiving with deep regret the resignation of the presidency by Mr. J. A. Cossins, who has been a member of the committee for forty-two years, an officer for thirty-seven years, and for eighteen years their president. The resolution states they look back upon this long record of unselfish and unstinted service with grateful remembrance, and thankfully acknowledge the invaluable help which the society has received alike from Mr. Cossins's great knowledge of archæology and from his enthusiastic support.

THE Carpenters' Company has arranged a course of ten lectures on art which will be commenced at the Hall, London Wall, E.C., on Wednesday, February 2. The lecturers and their subjects are announced as under: Mr. Lawrence Weaver, F.S.A., "Memorials and Monuments"; Mr. Arthur Gardner, M.A., "Sculptures of Rheims Cathedral"; Mr. William Strang, LL.D., "Some Movements in Modern Art"; Mr. Arthur Keen, F.R.I.B.A., "The English Roof"; Mr. D. S. MacColl, LL.D. (Keeper of the Wallace Collection), "The Work of Alfred Stevens"; Mr. W. Robert Colton, A.R.A.; "The Effect of War on Art"; Mr. H. J. L. J. Massé, M.A., "Seals"; Mr. H. Hughes-Stanton, A.R.A., "Landscape Painting"; Sir Krishna G. Gupta, K.C.S.I., "Indian Building, Ancient and Modern"; and Mr. William Dawson, M.A., "British Forestry before and after the War."

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AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—II.

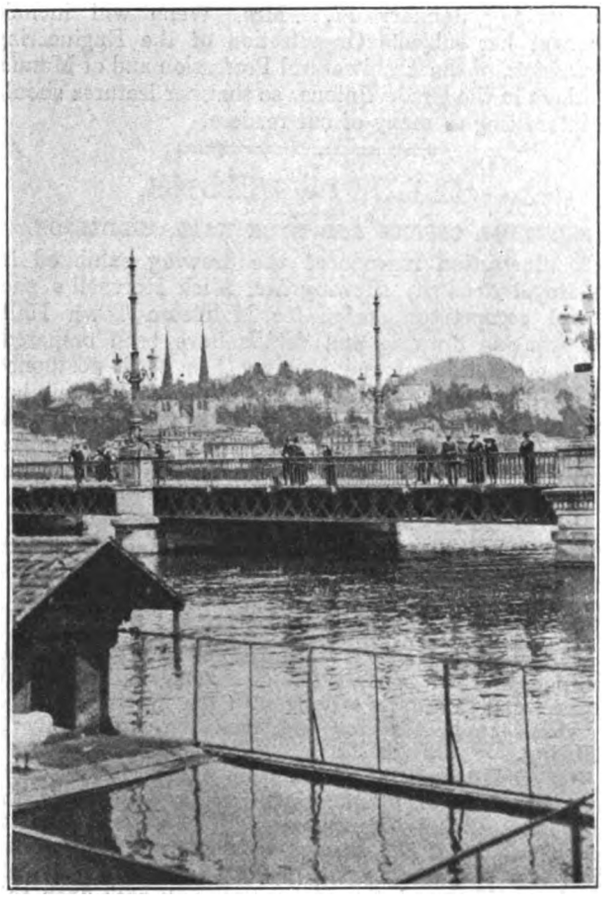
By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

LUCERNE, picturesquely situate on the Lake of Lucerne, or Vierwaldstätter See, at the efflux of the Reuss, is the capital of the canton of the same name, and is partially enclosed by well-preserved walls with nine watch towers, erected in 1385.

The situation of the town is particularly beautiful, facing as it does the Pilatus and Rigi, as well as the snow-clad Alps of Uri and Engelberg.

Lucerne stands upon both banks of the Reuss, the clear green waters of which issue from the lake very rapidly under some half-dozen bridges connecting the river banks.

Two of these bridges are very interesting examples of mediæval bridge construction, the Kapell-Brücke and the Spreuer-Brücke, both crossing the river obliquely. One of the views published is taken from the Bahnof Strasse, just at its junction with the Kapell-Brücke, and shows the fine modern See-Brücke, built in 1869-70, crossing from the town proper, the Schweizerhof Quay, to the railway station, or the Bahnof Platz.

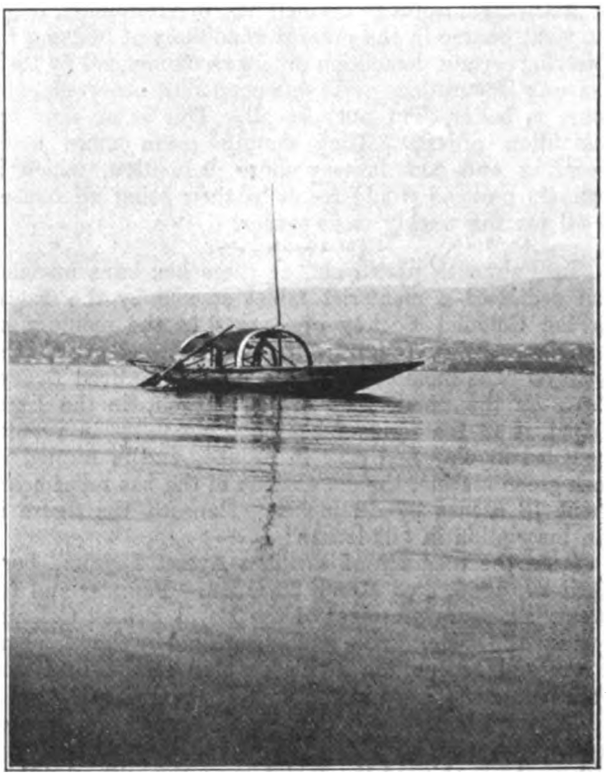


SEE-BRIDGE, LUCERNE, AND OHURCH OF ST. LEODEGAR.

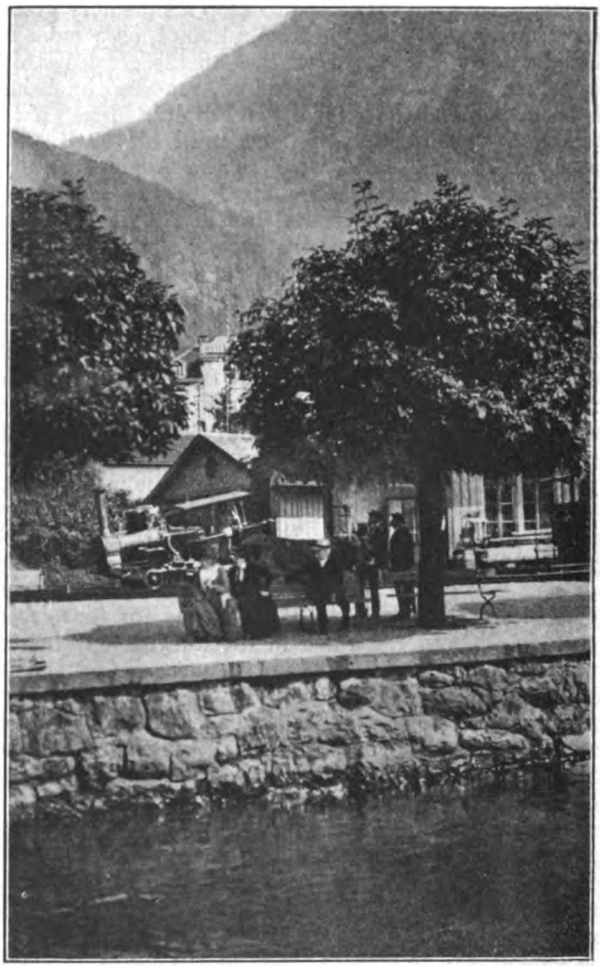
Both of the old structures are roofed, the Kapell-Brücke roof being painted with 154 scenes depicting episodes from the lives of St. Leodegar and St. Mauritius, the patron saints of Lucerne, and from the history of the town. The roof of the other mediæval structure is painted with scenes depicting a Dance of Death.

From the modern bridge and from the Schweizerhof Quay and Quai National a very extended and fine view is obtained of the surrounding country, rendered particularly expansive owing to the amphitheatrical situation of Lucerne.

The view includes the Rigi Group, with the Kulm and its hotels, and the saddle between the Kulm and the Rotstock, with the Staffel Inn, also the Schild, the Vitzauer Stock, and the Dossen. Rising to the left of the Rigi the Rossberg, and in the distance the peaks of the Liedernen Chain, the Clariden, the Todi, the Kammlistock, and so on. The Engelberg Alps, the Stanser



THE LAKE OF LUCERNE.



VIEW ON LAKE LUCERNE, SHOWING MOUNTAIN RAILWAY ENGINE.

Horn, and Pilatus are also included in what is a regular feast of mountain grandeur.

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The two quays named before form, with their fine chestnuts, beautiful promenades, and extend along the north bank of the lake, and are lined by fine hotels and other premises. Well placed at the end of the Schweizerhof Quay, on elevated ground and approached by a number of wide steps, is the Hofkirche, or church of St. Leodegar, supposed to have been founded in the eighth century and restored after a fire in 1633.

The two quaint slender towers seen in the illustration were erected in 1504-25. This church contains a carved pulpit and stalls of the seventeenth century, a fine crucifix, old stained-glass windows, forged ironwork, and other interesting features.

The old churchyard is enclosed by arcades in which there are several frescoes.

The time spent in Lucerne does not admit of much wandering, but after visiting the before-mentioned church, a few minutes' walk through the Alpen-Strasse brings one to the Lion of Lucerne, a most wonderful monument, executed in 1821 to the memory of 26 officers



VIEW ON LAKE LUCERNE.

and 760 soldiers of the Swiss Guard, who, in defending the Tuileries, fell on August 10, 1792.

The dying lion, which is 28 feet long, is reclining in a grotto, transfixed by a broken lance, and sheltering the Bourbon lily with its paw, and is hewn out of the natural sandstone rock after a model by the Danish sculptor Thorvaldsen.

The Lake of Lucerne, or Lake of the Four Forest Cantons, viz. Uri, Schwyz, Unterwalden, and Lucerne, is perhaps not surpassed in Switzerland for grandeur and variety of scenery, is nearly cruciform in shape, and has a length of twenty-three miles from Lucerne to Flüelen and a width of one-half to two miles, with a greatest depth of 700 feet.

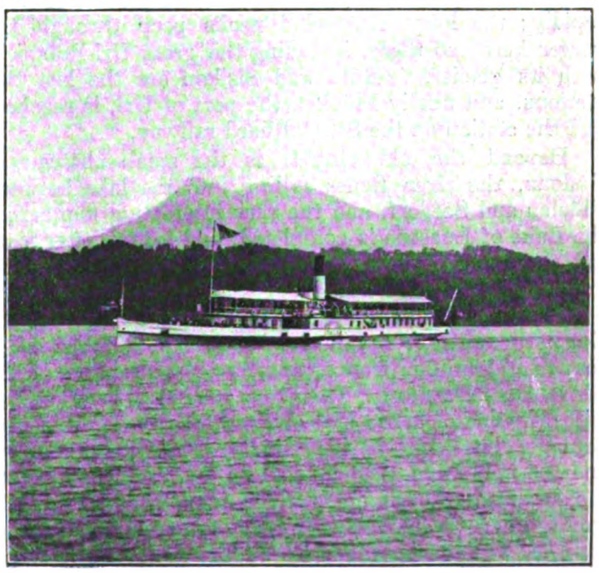
The passenger steamers plying the lake are high-class paddle steamers, with a capacity for perhaps 250 people. One of these steamers is taken at Lucerne pier for Flüelen, and the journey, increased by the zigzag crossing from station to station to about thirty miles, is accomplished in about two and a half hours.

From the deck of the steamer magnificent views of



VIEW ON LAKE LUCERNE.

the town and district are afforded, and as the passage is continued, the west bank is skirted close to the Villa Tribschen (occupied by Richard Wagner in 1866-72), and on the hillside stands the nunnery of Neubruch

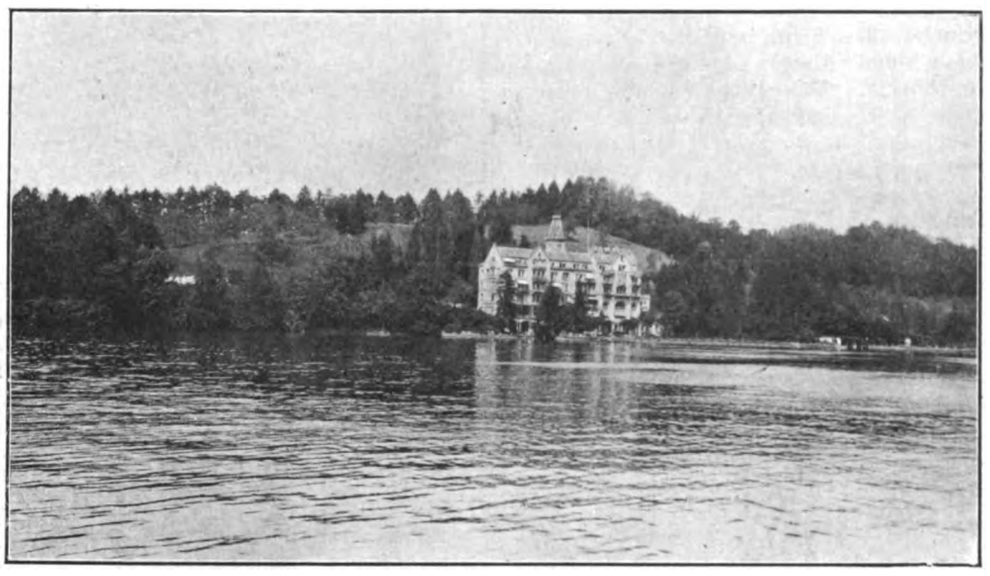


PASSING STEAMER ON LAKE LUCERNE.

erected in 1903. A small promontory to the left is passed with a statue of Christ standing clear into the lake at Meggenhorn. Immediately in front rises the Rigi, Pilatus, Bürgenstock, and almost endless mountain peaks.

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The various stations of Hertenstein, Weggis and Vitzau are called at, and beyond this latter station are two promontories called the Nasen (noses), at which point the lake apparently terminates.



LAKE LUCERNE.—VIEW TAKEN FROM STEAMER TRAVELLING.

The Obere Nase, a spur of the Rigi, and the Untere Nase of the Bürgenstock form the contracted points of the lake, and passing through the gap formed thereby, Buochs, Beckenried, and on the opposite bank of the lake Gersau are successively reached.

The latter place is situate in a sheltered site, with groups of quaint cottages with overhanging eaves dotted over the face of the hillside.

A crossing to Treib is then made on the opposite bank again, in the Canton Uri at the foot of the Sonnenberg. Still again the lake is crossed and Brunnen on the east bank is reached, the port of the Canton Schwyz and a station on the St. Gotthard railway, perhaps one of the most delightful little places on the whole lake.

At Brunnen the south arm of the lake begins, called the Urner See, or Lake of Uri. The lake is narrow, perhaps its narrowest, at this point. The mountains rise very rapidly; the lofty, snow-clad peaks peep through the gorges here and there, including the great Uri-Rotstock, with its glacier. Rütli and Sisikon are the last two stations, and finally Flüelen, the port of Uri, is reached, and the station on the St. Gotthard railway.

Beyond the old church is the small château of Rudenz, the river Reuss falling into the lake between Flüelen and Seedorf, and the very interesting trip across the Lake of Lucerne is completed, and forms, after leaving the stuffy railway carriage, a very enjoyable and much-appreciated diversion.

Flüelen may be reached from Lucerne by the St. Gotthard railway, a line constructed in 1872-82 at a cost of 271 million francs, and now the property of the Swiss Confederation. This line attains a level at the highest point of 3,786 feet above the sea-level, this particular point being in the middle of the great tunnel, and the maximum gradient is 1 in 40. At some points the ascent has been made much more gradual than it would otherwise have been by the construction of spiral tunnels, perforating the sides of the valley as it were. There are four of these tunnels on the south side and three on the north side of the mountain.

This unique railway has altogether eighty tunnels of the aggregate length of 28½ miles, 324 bridges of more than 32 feet span, and very many smaller bridges. To be seen more perfectly and examined more carefully this interesting line and its various structures should be viewed from the roadway rather than from the railway train, and one may drive in an open carriage or walk from Amsteg to Göschenen, a distance of twelve miles, and from Rodi-Fiesso to Giornico, a distance of fifteen miles, and in so doing may make a more minute examination of this truly original line.

In the train journey the line crosses the Reuss after leaving Lucerne, passes through the Allenwindden-Wesemlin tunnel, emerging on the east side of Lucerne.

After gradually ascending towards Seeburg, admitting of splendid views of the lake, the town, and the Alps,



SCHWEIZERHOF QUAY, LUCERNE.

and passing through three tunnels, the line runs high up on the west bank of the bay of Küssnacht, opposite the Rigi, then calling at several stations, and passing through a number of deep wooded cuttings, Arth-Goldau is

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reached. This village was the scene in 1806 of a terrible land slide, which buried four villages.

The railway traverses part of this scene of desolation, and after passing a number of other stations Flüelen is reached.

Without doubt, if one is not pressed for time, the passage from Lucerne across the lake by steamer to this point is by far the more preferable route. Railway travelling is never very enjoyable, at least not to the writer, especially when extended, but in attempting to traverse the relatively large distance one is bound to cover in such a holiday the railway travelling necessarily becomes irksome, and such a diversion as that provided by the steamer trip across the Lake of Lucerne is very acceptable, apart altogether from the agreeable change of view and surroundings.

The train is again joined at Flüelen, and the Reusstal is ascended with the Bristenstock in the background, the two Windgällen being seen to the left.

Altdorf, the next stopping-place, is the capital of the Canton Uri, and lies in a rich valley surrounded by stately mountains. This little town, with about 4,000 inhabitants, is the traditional scene of the adventures of William Tell, the liberator of Switzerland from the Austrian yoke.

The Schächenbach, in its natural bed, is now crossed near its confluence with the Reuss, and after passing Erstfeld the Reusstal contracts and the line begins to ascend on the right bank, passing through numerous prettily situated little mountain-side village stations. Above Amsteg the line pierces a projecting rock, crosses the Kärstelenbach by a fine viaduct of 147 yards long and 178 feet high, providing a truly magnificent view, then passing through the slope of the Bristenstock by means of two tunnels, and across the brawling Reuss by an iron bridge 256 feet high, the journey continues along the left bank of the picturesque Reusstal.

Traversing what appears to one as an unending variety of tunnels, viaducts, long deep cuttings, and skirting the hill and mountain sides, the traveller is eventually brought to perhaps the most interesting portion of this wonderful railway line.

Above Gurtnellen, in order to make the ascent more gradual, the line passes through three spiral tunnels and describes a long double loop. After crossing the Gornerenbach and the Hägrigenbach and passing through the Pfaffensprung spiral tunnel, 1,635 yards long, in which the line climbs 115 feet, more tunnels are encountered, and a crossing made of the fine bridge over the Meienreuss, a further tunnel and bridge, then the Wattinger spiral tunnel, 1,199 yards long, in which 76 feet are climbed, still more tunnels, spiral tunnels and bridges, and Göschenen is reached after a journey from Flüelen of under one hour.

(To be continued.)

THE announcement that an illustrated volume of the Summer Exhibition will be published in May next by authority of the Royal Academy, has caused a large number of inquiries to be addressed to the Secretary of the Royal Academy, who is now authorised by the Council to supply the following particulars: "Royal Academy Illustrated," which is to be issued by the authority of the Council of the Royal Academy, will be the only annual publication containing reproductions of the works of members. Most of the pictures, of which at least two hundred will be illustrated, will be reproduced in photogravure.

H.M. BOARD OF WORKS have sanctioned a scheme, promoted by the Cockburn Association, for the provision of five stained glass windows, to the design of Mr. Douglas Strachan, in St. Margaret's Chapel, Edinburgh Castle. The chapel is the oldest, and one of the smallest ecclesiastical buildings in Scotland. It is believed to date from the middle of the twelfth century, and is associated with the name of the saintly Queen of Malcolm Canmore. It was Mr. Douglas Strachan, the artist in stained glass, who offered to replace the five windows. The one condition he laid down was that the Cockburn Association should present £36, the cost of three of the windows, to some war fund.

THE PAGODA AT KEW GARDENS.

IN a recent issue of the Bulletin of the Royal Gardens, Kew, "G. D. P." writes:—

The Pagoda was built in 1761-2 to the design of Sir W. Chambers. As originally built, the main roof with the ornamental chains and hoops to the terminal pole were of copper, double gilded. The minor roofs were covered with highly coloured iron plates, and ornamental dragons crouched at the hip terminals of the roofs. The dragons were in wood, and treated with highly coloured enamels. These features existed up to about 1820. But the iron cover plates of minor roofs and the wooden dragons must have perished and been removed soon after, when the roofs were slated.

The severely straight lines of these roofs—now shorn of dragons and Eastern colour—was much lamented, and in 1845, when "an expensive scaffold had been erected round the Pagoda to paint the wood, &c., point the brickwork, and erect a new terminal," Sir W. J. Hooker suggested that it was a fitting opportunity to restore the original features of the Pagoda by fixing new "metal or glass" dragons to the angles of the roofs. This was supported by Mr. Decimus Burton, who, however, wished to improve on the original design. He suggested that in addition to restoring the dragons the eaves should be curved up at the angles, and the roofs covered with copper, and that both roofs and brickwork should be painted to harmonise better with a Chinese structure. Projecting bells were to be hung at the hip terminals, and chains were to hang from the terminal pole to the eaves of main roof. But the estimated cost of £3,500 for these alterations made their execution impossible. Sir W. J. Hooker's suggestion to replace the dragons, and so restore the Pagoda to the original design was estimated to cost £850, and proved also too costly for acceptance.

Nothing daunted, he returned to the charge in 1856, renewing his suggestion of 1845 for the restoration of the dragons, &c., but they were again "postponed for another year," and so the Pagoda remains to this day.

On the occasion of executing the periodic painting and repairs at the Pagoda this summer—1915—investigation was made to discover the cause of so much rain coming through the roof and ceiling. The roof generally was found to be covered with copper. It is in excellent condition, and shows no signs of disturbance or repair since its original construction. The pole and its flashing, however, were found to be so defective as to need renewing at once. . . On taking down the old pole a pencil note was found on the lower end, under the roof, recording that "this pole was erected by J. Wickens, August 1, 18(?)7." A knot on the top of the third figure made this date very uncertain. But fortunately, on uncovering the table round the pole at the roof apex, two more records were found of the same character, with the definite date of 1867. This definitely fixes the date of erection of the pole just taken down. A further interesting discovery was made of a cut in date of August 20, 1825, on the bed plate on which the pole stands, and it is fairly certain that a new pole would be erected at the same time as the insertion of the bed-plate. There is evidence, therefore, that the various terminal poles were erected at the following dates: when the Pagoda was new in 1762, and in August 1825, June 1845, August 1867, and the last in September 1915.

THE SOCIETY OF ARCHITECTS.

THE annual general meeting of the Society of Architects was held on Thursday, the 13th inst., when the report of the Council for the year ended October 31, 1915, was presented for consideration. From it we give the following extracts:—

At the last annual general meeting the view was expressed by a representative of the general body of members, that the Society must be prepared for a less favourable report on the next occasion. The Council trusts that the members will agree after a perusal of the report, that while all the departments of the Society's work have been affected by the war, its position both

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numerically and financially has been not merely maintained, but more firmly established. This has been effected by a policy of economy which, while not interfering with the essential activities of the Society has enabled the Council to conserve the individual interests of members, especially of those more seriously affected by the war than others, to consolidate the Society's resources, and to make what provision is humanly possible for future contingencies.

Membership.—Twenty-one candidates have been elected to membership by ballot of the members, and one graduate and six students have been admitted to the respective registers by the Council. After allowing for deaths, resignations, lapses, removals and transfers, the total membership on October 31 was 1,213, made up as shown:—Honorary members, 30; retired members, 25; members, 1,003; graduates, 7; students, 148.

Members on War Service.—Up to October 31 information has been received that ninety-five members, one retired member, one honorary member, three graduates, and fifty-four students are on active service. The list of the names is attached to the report. In this connection it may be noted that very many members are over military age or otherwise ineligible.

Professional Practice: Attendances on Sub-Contractors.—As stated in the last report, the Council was then in negotiation with the Surveyors' Institution on the question of the definition of the term "attendance," the proposal being that the sub-contractor shall know precisely what services must be performed by him and rendered to him. The Council after careful consideration of the memorandum was able to approve in principle the recommendations of the Surveyors' Institution, but made some suggestions for alterations in detail. These related more particularly to descriptive items which it was thought might with advantage be summarised in the case of small contracts, and set out fully in works of more importance. The Council also suggested an additional clause relating to the use of scaffolding. After further negotiations the Surveyors' Institution intimated that the suggestions made by the Society would be adopted when re-issuing the circular on attendances on sub-contractors. Full details relating to the matter were published in the March issue of the Society's "Journal."

The Board of Agriculture and Fisheries, and Rural Cottages.—The attention of the Council was called on a question of principle to the issue by the Board of a report containing designs, specifications and working drawings of cottages, which document could be purchased for a nominal sum. In the report there was no definite reference to the desirability of retaining an architect's services in order more fully to attain the object which the Advisory Committee had in view. The Council felt that the omission would tend to accentuate the feeling already existing among some private and public building owners, that the services of an architect were superfluous in connection with work of this kind. It therefore entered a strong protest on the point to the Board. The Board's reply did not cause the Council to withdraw its observations or to change its opinions that an injustice had been done to the architectural profession by the publication of the report in that form by a Government Department.

Professional Defence.—The services of the Advisory Committee were called in to consider whether a case submitted by a member involving an alleged infringement of copyright in a design was of such a character as would justify the Society in co-operating with the member in bringing an action to decide the point in the interests of the profession. The case was gone into very fully in all its bearings, and the findings of the Committee were placed at the disposal of the member concerned for his guidance.

The Practice Committee has been called upon frequently to advise members on points of practice. The Committee has also had before it points relating to matters of professional etiquette. The questions raised have shown the desirability of strengthening the disciplinary powers of the Council, and a proposal to this end will presently be placed before the members by way of a proposed alteration to the Articles of Association. At the same time opportunity will be taken to suggest further revisions in other ways.

Standard Documents.—The model form of conditions of building contract, in the drafting of which the Council had the assistance of Mr. W. Valentine Ball, barrister-at-law, was the subject of discussion at a members' meeting in May. Since then other suggestions for revisions have been received from members, and the Council hopes it may be possible during the new session to report further progress. There are, however, questions of policy as well as of detail which require careful consideration, and some time must necessarily elapse before a definite announcement can be made.

In the meantime the Council has drawn up a number of forms for use under the London Building Act.

These forms have been published and may be obtained from the Society at the price of 3*d*. each.

A form relating to a "Party Wall or Party Structure Award" is printed in the "Year Book," as a basis on which such documents might be drawn up. It was thought undesirable to publish it separately, as the details of the award must be subject to variation in each case, but it is hoped the document may be found of service in the direction indicated.

Builders' Endorsements on Tenders.—The Council at the request of the Institute of Builders considered the proviso which the members of that body had been advised by their Council to endorse on all tenders for future building operations. It is to the effect that the tender is based on the rates of wages prior to August 1914, and that any advance in these rates should be added to the contract, and, if necessary, an extension of time given for completion.

The Council of the Society was unable to approve the clause as worded, and suggested that it should be modified to provide that the tender is based on the normal rate of wages prevailing at the date of sending out the tender. Any variations exclusively due to war conditions to be adjusted on completion, and the contractor is not to be relieved of his obligation to protect himself by placing his orders for materials in the early stages of the contract. The architect's decision on these matters is to be final and without appeal.

Another point raised with the Society by the Institute of Builders was the rise in cost of building materials due to the war and the desirability from the builders' point of view of getting architects to give favourable consideration to any claims for extras due to this cause. The Council of the Society felt that it was a matter in which members should exercise their individual discretion.

Competitions.—The Council has had under consideration the particulars relating to architectural competitions in the following districts:—

Southend-on-Sea, Gateshead, Dumfries, Luton, Hollowell, Bradford, Walthamstow, Macclesfield, Coventry, Leicester, Connah's Quay, Dundalk, Stepney, Whitehaven, and York.

In the case of Hollowell, Southend, Macclesfield, Coventry, Whitehaven, Dumfries, and York, the promoters were approached with a view to some of the conditions being amended. The members were notified in the Journal, and through the professional papers, and were asked not to take part in these competitions without first ascertaining whether the conditions had been approved by the Council.

The Society vetoed the Gateshead, Southend, and Whitehaven competitions, but withdrew their embargo on the latter on the promoters conceding the points raised by the Society.

In other competitions, where some of the conditions were unsatisfactory and the promoters were unwilling to amend them, the Council felt that the circumstances were such that it could not do more than call the attention of the members to the points on which it considered

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the conditions required amendment and leave the matter to their discretion.

The difficulty of dealing with unsatisfactory competition conditions is rendered more acute from the fact that usually action has to be taken after the conditions are published. It seems likely that if the promoters could be approached while the matter is in its preliminary stages any conflicting views of the parties could be more readily reconciled.

One member tendered his resignation at the request of the Council after taking part in a competition which had been vetoed by the Society, and another who had inquired as to his position in the event of his competing under similar circumstances on another occasion, withdrew from the competition.

Finance.—The total income for the year is £2,686, or £217 less than last year, but the income from subscriptions, the main source, is £2,190, slightly in excess of last year. The drop is principally in the revenue from publications, which is less by £129. There is an increase in legal fees, mostly for work commenced before the war, and including the form of building contract and other standard documents.

The Society has restricted its donations to benevolent and military organisations and objects, and there is a reduction of £177 in the donation account. The net result is a surplus for the year of £326, and a balance carried to the balance sheet of £274 against £67 last year.

The outstanding feature of the Society's finances is that by effecting economies the Society is in a better position at the end of the first complete year of working under war conditions than it was in normal times. There is a larger surplus, a larger reserve, and fewer liabilities. This position has been attained without diminishing the Society's essential activities, and notwithstanding the fact that the Council has recognised in a liberal spirit the position of those members who have found it impossible temporarily to continue their subscriptions, either while on active service or from other causes directly due to the war. The full effect of some of the economies made has not yet been felt.

Registration.—The Society's Parliamentary propaganda in this direction has been suspended during the war. The need of registration in the interest of all concerned becomes more evident every day. The war itself has provided an object lesson in the attitude of the Government towards the profession as a body, in placing in other hands very much work in connection with war contracts which might well have been allotted to architects, even if only as some compensation for its action, no doubt a very necessary one at the moment from the Government point of view of discouraging public and private expenditure on building operations. Until architects have a legal status and are properly organised, they cannot expect to receive as a body that recognition which other protected professions can claim. The efforts of architectural bodies in other parts of the Empire are all in the direction of statutory registration, and in several of the Dominions success has been attained and in others the question of registration is still being debated with a view to further action at an early date.

In South Africa the Society's branch is actively supporting a proposal for the extension of the Transvaal Architects' Act to the Union of South Africa, and has undertaken to give the Cape Institute of Architects not only moral, but substantial financial support to this end. It is stated that in Queensland there is a Registration Bill under consideration by the Cabinet, and that the Royal Victorian Institute of Architects are pushing forward with a Bill based on the lines of the Transvaal Architects' Act. Similar steps are being taken in Tasmania and South Australia, and registration is understood to be in force in New York, Michigan, and Florida. These centres are in addition to others which have already secured registration. The list is incomplete, but it serves to show how the principle for which the Society has contended for so long and is still contending is becoming increasingly recognised by other architectural institutions and by those sections of communities having dealings with architects.

Education.—The Council at the commencement of the session renewed its permission for the Beaux Arts Committee to use the Society's premises for its meetings, and the services of the Secretary and of the clerical staff for carrying on its business. The war has affected the influx of new members into the atelier, but the work has been continued on the same lines as before, although under somewhat different conditions.

Employment Scheme.—The Society is represented on the Architects' War Committee and its subsidiary committees, one of the most important of which is the Professional Employment Committee. This body carries on its work at the Society's premises with the aid of the secretary and the clerical staff. The work of this committee has very greatly developed during the past year.

The scheme of civic surveys, initiated by Mr. Lanchester, a member of the Committee, has received Government sanction and support, and is now a separate department. The Council offered the promoters the use of the Society's premises for the survey work, but it was evident that the requirements would include accommodation for a staff of draughtsmen and investigators which it was beyond the Society's present power to house. The work is being carried on at the R.I.B.A. Galleries and provincial centres have been also established. Some of the work connected with this still falls upon the Professional Employment Committee, but its chief work is in dealing with developments of the Society's original proposal for finding temporary paid work for architects in distress owing to the war. This usually takes the form of measured drawings or descriptive reports on many and varied subjects, and is distinct from the Government Civic Survey work. It may be remembered that as an earnest of its desire to support the scheme for providing paid professional work the Society made a donation of one hundred guineas as the nucleus of a fund. The members of the Society have since augmented this to a total of £175 10*s.* 3*d.*

Generally.—The three main principles which the Council has endeavoured to maintain during the year in regard to the Society's domestic affairs are (*a*) economy without loss of efficiency in essentials; (*b*) consideration to members in temporary difficulties through circumstances caused by the war; and (*c*) foresight in regard to provision for future contingencies. The result of following this policy is reflected in the position of the Society as shown by the report and statement of accounts.

The Society as a body has actively supported to the utmost of its power the professional organisations connected with recruiting, benevolence, and relief work.

It is with some confidence of its general acceptance that the Council presents its report to the members, and invites from them a continuance of that co-operation and generous support which alone has enabled these results to be achieved.

SOME NOTES ON REINFORCED CONCRETE.*

By R. M. KEARNS, F.S.I.

HUNDREDS of books—many of them being veritable cyclopædias—and thousands of articles have been written on subjects relating to reinforced concrete. These literary efforts have emanated from all sorts and conditions of men—engineers, architects, surveyors, expositors of the theory of construction, specialists, journalists, and, among others, a panel doctor. The latter has contributed some information of vital importance. He has announced that reinforced concrete buildings are "inimical to the growth of spore-bearing organisms," and has expressed the opinion that "with healthier homes we shall become a healthier race and

* Abstract from a Paper read at the ordinary general meeting of the Surveyors' Institution, on January 10

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a people no longer liable to rheumatism." We shall therefore do well to discuss the subject of reinforced concrete.

In view of the mass of literature describing the various "systems," and of the theories and bewildering formulæ connected with stresses and strains, the subject appears to be particularly dry; but a keen interest in it may be aroused if we exercise our reflective faculties in attempting to realise all that a reinforced concrete structure represents. For instance, if we pause to inquire into the origin and supply of our building materials there is unfolded to us the enthralling epic of the soil; from which we learn that our ballast and sand (the water-worn fragments of pre-existing rocks), the mineral products from which the steel rods are made, the chalk and clay for our cement, all come to us from a far-distant past in obedience to the marvellous law of nature. We learn that the solar system itself is involved, and that from the earth's planetary relations and the concomitants of night and day, summer and winter, heat and cold, arise forces ranging from the terrible upheaval of the volcano, from earthquake and hurricane, to the soft zephyr and the gentle-flowing stream; all of which unite in the ceaseless work of modifying the earth's crust—here disintegrating, and there reassembling, reconstructing. In this connection it may be noted that in assembling our materials and forming reinforced concrete we are working on Nature's lines, evolving, what is very remarkable, a rock-like composition which is reputed to be proof against the primary disintegrating forces to which I have referred—reinforced concrete, when constructed properly, being able to withstand the shock of an earthquake and all attacks from fire, wind, and water.

But we must not imagine that reinforced concrete will for ever remain untouched by the limiting hand of Time; for, according to Cowper,

> "We build with what we deem eternal rock:
> A distant age asks where the fabric stood;
> And in the dust, sifted and searched in vain,
> The undiscoverable secret sleeps."

If we now turn our attention for a moment to the timber—in scaffolding, forms and centering—which is so much in evidence during the construction of a reinforced concrete building, a mental flight is suggested to the spruce-fir forests of Northern Russia, Norway and Sweden, or North America. From some far-off mountain slope, where the silence is broken by the swinging axe and the crash of falling trees, we may follow the course of the logs and spars as they travel on ice or snow, on logging railway, or, river-borne, through a panorama of pine-clad hills and rolling plains—

> "Where the sparkling sunbeams glance
> All across the wide expanse,
> And the ozone in the breezes
> Makes the pulses throb and dance."

We may follow still further to the swirling waters, and the hum and shrieking whirr of sawmills, and then across the sea to crowded dock and contractor's yard.

Passing to the scenes in which our steel reinforcements are manufactured, we enter the murky atmosphere of coalfields and foundries. We may now conjure up some lurid pictures of swarthy workers in iron engaged on their allotted tasks, and presenting a weird and uncanny appearance as, stripped to the waist in many cases, they move to and fro in the fierce glare of furnaces and among machinery which is awe-inspiring in its power and precision.

And what of the cement which, after all, is the most important factor in the construction of reinforced concrete? What is this wonderful material, inert in itself, but which, under the influence of water, exerts a silent and progressive force that binds ballast, sand, and steel with an interminable grip, thus forming a still more wonderful concretion? It is a fine powder known as Portland cement, so called on account of its resemblance, when employed in forming a rendered surface, to Portland stone, and is made from a mixture of chalk (or limestone), clay, and water by various processes of drying, burning, and grinding.

For a succinct and lucid definition we must, however, go to America. Mr. Jerome Cochran, in "A Treatise on Cement Specifications," gives the following:—

"Portland cement shall be defined as the finely pulverised product, resulting from the calcination to incipient fusion, of an intimate mixture of properly proportioned argillaceous and calcareous materials, and to which no addition of other material greater than 3 per cent. has been made subsequently to calcination. No slag, pozzolana, sand, nor mixed cements, will be accepted under this classification. In other words, the cement shall be manufactured of a mixture of argillaceous and calcareous material in definite proportions, and shall contain no furnace slag, gray limestone, hydraulic lime, or trash."

Having, then, come to a clear understanding in regard to Portland cement, we may venture to recall the fact that, although it was invented in 1824, it is only after trials and experiments undergone during a period of about ninety years that it has reached its present perfect condition. It is significant that the advent of this cement, which was destined to have such a far-reaching effect on the building world, synchronises very closely with that of steam power as a means of locomotion. The evolution of Portland cement, and the displacement for building purposes of cast-iron, and then wrought-iron, in favour of steel, are, indeed, eminently associated with the phenomenal progress in applied science which took place during the Victorian era. A hundred years ago, had reinforced concrete been initiated in any reliable mode of construction, it could not have been adopted for building purposes except in a few districts; for at that time, when railways and motor-lorries were non-existent, and when a system of canals was advocated for the transit of merchandise, the cost of getting the proper materials together would have been prohibitive. Now, however, owing to the economy effected in the manufacture and delivery of cement and steel by the use of steam and electric power, the adoption of reinforced concrete should come within the range of practicability, not only in the United Kingdom, but in any habitable portion of the globe where there is road or rail.

I now submit some notes on reinforced concrete structures, hoping that they will serve as a basis for an edifying discussion.

Starting with H.M. New Stationery Office, a building which has attracted much attention, I quote, with the kind permission of the Commissioners of H.M. Office of Works, the following extracts from the specification:—

River or Pit Ballast.—To be free from sand and dust, must not contain any traces of calcareous, argillaceous, or other foreign matter, and to be broken into various sizes, so that all shall pass a $\frac{3}{4}$-inch mesh, and be retained on a $\frac{1}{4}$-inch mesh. The sand to be screened out of the ballast; all passing the $\frac{1}{4}$-inch mesh to be reckoned as sand.

Sand.—To be freshwater, river, or pit sand, absolutely clean and sharp, properly graded and varied in size; all passing a $\frac{1}{4}$-inch mesh, and at least 75 per cent. passing an $\frac{1}{8}$-inch mesh.

Cement.—The cement shall be Portland (slow setting) to comply with the British Standard Specification (1910) for Portland cement. The builder is to provide with each consignment the maker's certificate of quality, but such certificate is not to be taken as conclusive. Such tests as the architect may direct will be made from time to time, and no consignment is to be used until the architect has signified his approval. The builder is to deliver consignments in advance for use, so as to permit of twenty-eight day tests being made without causing delay in the progress of the work.

Formwork.—The whole of the timber centering, &c., used for the formation of concrete work is to be constructed in a solid, rigid, and substantial manner. The centres to be so formed that they may be removed in portions without shaking or jarring the concrete. To

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be wrought thicknessed and close-jointed, except where walls and ceilings will be plastered, and also to all external work where boarding, rough from the saw, and close-jointed, is to be used. No part of the centering is to be removed until the concrete is thoroughly set, and until the consent of the architect has been obtained. The formwork is to be thoroughly cleared of shavings and rubbish, and must be hosed out before the concrete is deposited.

Concrete.—To be made up as follows:—

Cement	1 cwt.
Sand	2 cubic feet.
Ballast	4 ,, ,,

To be sufficiently watered and mixed thoroughly, in an approved mechanical appliance, to the satisfaction of the architect. Test cubes, 6 inch by 6 inch by 6 inch, of the concrete are to be mixed by the builder from time to time as the architect may direct. These cubes are to have an ultimate crushing strength of 1,800 lb. per square inch at twenty-eight days. The concrete to be deposited in layers not exceeding three inches, unless otherwise permitted by the architect, and to be properly punned and consolidated. The reinforcement to be completely surrounded and covered. No traffic on or over the concrete to be permitted until it is thoroughly set. It is to be protected from frost, inclement weather damage, or too rapid drying, and kept well wetted. No steel, except binding rods or stirrups, is to be nearer than 1½ inch to the external face of concrete, except in thin floor slabs, where the cover may be reduced to ¾ inch. No concrete to be used which has been left standing and begun to set. Floors and roof to be finished smooth with a rule. The roof slabs to be laid to fall.

Granolithic Finish.—The upper half-inch of floors (except where otherwise specified) to be formed of one of cement to two of approved granite chippings to pass a ½-inch mesh, and to be free from dust. To be laid while the reinforced concrete is green, and to be trowelled off within an hour of laying. This surface finish to be in addition to the structural part.

Steel.—To be obtained from firms approved by the architect, and to be of such quality as to withstand the following tests: The ultimate tensile strength lengthways with the fibre is not to be less than twenty-seven tons, and no more than thirty-two tons to the square inch. Specimen pieces of steel are to be bent cold until the ends close over a bar, the diameter of which is the same as that of the piece to be tested. The steel rods throughout are to be of the exact lengths and diameters shown on drawings. No welding or piecing of rods will be permitted, and they are to be bent where required to templates and while cold. After such smiths' work as may be required on the rods has been completed, the steel of which they are formed must present a smooth surface free from seams, flaws, or cracks. Great care is to be exercised in the fixing and maintenance—during the placing of concrete—of the steel rods in the exact positions shown on the drawings, and in securing the links and stirrups by which the rods are to be connected together in the positions shown for them, so that the position of the reinforcement in the finished structure may exactly correspond with the position as designed.

External Finish.—Render the reinforced concrete work where exposed externally with Portland cement and sand in the proportion of one of cement to three of sand, ½-inch thick, finished with an approved floated face. The finishing coat to be applied before the backing is thoroughly set. The concrete is to be hacked to form a sufficient key for the rendering, and is to be cleaned and thoroughly wetted before the rendering is commenced.

Boiler Chimney.—To be lined to a height of fifty feet with approved Staffordshire firebricks laid in fireclay, with all joints well flushed up. To have ½-inch air space between the firebrick and concrete, ventilated as directed. The chimney is to be built clear of the building, as shown on drawings.

Flues.—Smoke flues in chimney-breasts are to be formed of terra-cotta pipes ten inches in diameter and with butt joints.

Bills of quantities were prepared, from which a schedule of prices was made for the adjustment of variations. The most important items were, briefly, as follow:—

Excavation from general area over site	At different depths.	Per yard cube.
Ditto, in pier holes	,,	,,
Planking and strutting	—	Per foot super.
Ferro-concrete (steel taken separately):—		
In footings to columns		Per yard cube.
In columns to basement and sub-ground floors		,,
In ditto to other floors (each floor kept separate)		,,
In sub-ground and ground floor and in beams to same		,,
In other floors and in roof (each kept separate)		,,
In external walls at various levels (one item)		,,
In external ditto ditto (one item)		,,
In area walls		,,
In chimney and foundations to same (one item)		,,
In bridge (one item)		,,
Steel bars prepared and hoisted (one item)		Per ton.
Formwork:—		
To columns, internal or external (one item)		Per yard super.
To floors, including beams (sides of beams, &c., not measured but covered by price) (one item) ...		,,
To staircase (measured on girth of riser and soffite)		,,
To chimney		,,
To internal and external walls (one item)		,,
To bridge (one item)		,,
To retaining walls (measured both sides and on the flat)		,,
To mouldings (excepting to columns)		Per foot super.

I have omitted the prices advisedly. The schedule from which the foregoing items were taken does not coincide with the "Standard Method of Measurement" now recommended for general adoption, but it answered its purpose satisfactorily, and had the "Standard Method" been framed in 1911, when the erection of the New Stationery Office was begun, I doubt, in view of the large quantities of materials involved, whether the concrete required for this building would have been billed in "feet cube" or the steel in "pounds."

A short time ago I saw the bills of quantities for reinforced concrete in connection with a large industrial building, and found that the quantities had been prepared somewhat on the lines of the "Standard Method" from complete drawings, showing reinforcements and other work. Bills of quantities such as these may be admirable so far as they enable contractors to prepare close estimates when tendering, and also in regard to the data they provide for the accurate—though, perhaps, unnecessarily elaborate—admeasurement of variations; but I think they are incomplete if they fail to give the contractors the total quantity of concrete in "cubic yards," and that of steel in "tons." It may be argued that the contractors themselves are able to calculate these totals from the details given, but it is not fair that they should be called upon to do so, and it would be better for all parties if the calculations were made by the quantity surveyor. If such totals were furnished, in addition to the detailed quantities which only should be priced, the contractor whose tender is accepted could at once make arrangements for obtaining his materials. Further, it is held by estimators that these total quantities are essential and important factors in arriving at the detailed prices on which the tender is based. The contractors would also ascertain the quantity of cement from that given for the concrete. On the proportions of 1+2+4 they would probably calculate at the rate of 1 sack of

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cement to one-third of a cubic yard of concrete. Thus, the number of yards multiplied by three would give the required number of sacks of cement; dividing this number by eleven (where each sack weighs about 204 lb.) the cement would be shown in tons.

The grand totals to which I have referred would also show the ratio of steel to concrete—generally about 2 cwt. of steel to 1 cubic yard of concrete—from which the average cost of the complete reinforced concrete, at per yard cube, could be ascertained and, on occasion, made use of when measuring for certificates in respect of advances. In this connection the surveyor would allow about 60 feet super of formwork for every yard cube of the finished concrete.

It may be interesting to note that the proportions of the concrete for the industrial building to which I have alluded were 1 cwt. cement, 2¼ cubic ft. of sand and 4½ cubic ft. of aggregate, as against 1 + 2 + 4, the slightly richer brand adopted by the Office of Works.

(To be concluded.)

NATURAL DRAWING.

By T. R. ABLETT, F.R.G.S., R.D.S.

A MEETING of the Royal Drawing Society was held on Monday, January 3, in connection with the Conference of Educational Associations at London University, Mr. Lewis Solomon, F.R.I.B.A., presiding, when Mr. T. R. Ablett, Art Director of the Society, lectured on "Natural Drawing."

The Chairman, in opening his address, pointed out the great use of natural drawing in general education, and the way in which the teaching of it has advanced during the past years. When he was a boy drawing was not taught in the ordinary way in schools at all; it was quite a luxury, something for which one paid extra. Nowadays drawing is taught almost as much as reading, writing, and arithmetic. In those days you were given a drawing and told to copy it. This sort of drawing lesson was given once a week for half an hour—it was of no interest to the pupil, and the result was the drawing lesson was shirked whenever possible. It was many years before the pupil was given an actual object to draw which would interest him. It occurred to some people that the method of teaching was quite wrong, and amongst these was Mr. Ablett. He said: "This is all wrong; you are injuring the child, instead of giving him pleasure. Take the object itself and put it in front of him and let him visualise it. It is a better lesson for him to let him draw the object as he sees it." We have to be thankful to Mr. Ablett for what he has done. He is practically the pioneer of this work, for many years ago Mr. Mundella took an interest in this subject and got Mr. Ablett to come to London to teach the teachers to educate children on a different system to the one they had been using.

Mr. T. R. Ablett then spoke as follows:—

Natural drawing, or the snap-shot drawing of images left on the mind by sense impressions, is the drawing of an individual's own observations in a way invented by himself, and produces the most reliable description of the mental pictures which those observations imprint on his mind, either directly or by means of association.

Not only is natural drawing the means of recording self-gained information, it also checks off the visualisations produced by that information, and so makes them more exact for after use by the practical imagination.

The Royal Drawing Society calls the attention of the educationalist to the fact that this is a natural education of the highest value, and should be esteemed throughout school life as giving increased facility in acquiring the more restricted learning which is familiarly known as "book knowledge"—that is, Nature explained as far as we know it.

We lay emphasis on this because the masters and mistresses of schools for general education are often quite behind the practical world in realising the important aid which drawing gives in acquiring and communicating knowledge.

Every general teacher must have a clear visualisation in his own mind of the object he describes to his pupils. Their drawings will show his success or failure both in visualisation and verbal description.

Does not teaching sometimes fall short of its mark because it is assumed that when a thing is said it necessarily comes up in the mind of the pupil in the exact form which it took in the teacher's own mind?

Our experience is that if we arrange a series of experiences to produce the same uniform effect, they yet produce different visualisations in the minds of those who are being tested.

The Royal Drawing Society is situated in the midst of various societies for the promotion of learning, and is fortunate enough to have engineers, architects, and other scientific men on its Council. They tell us that those who succeed best in the various professions are found to have good powers of visualisation.

That sixth sense, the "sense of shape," is highly developed in the successful members of all professions dealing with the concrete—architects, engineers, botanists and zoologists, soldiers and sailors, and many others. The images with which they fill their minds are exact, and their thinking is therefore exact.

Words are notoriously deficient in their powers of description, and this constantly comes out in the saying, "Words fail to express!"

A thinker who merely has words for his images is greatly handicapped. For this reason general education by means of words only is less esteemed than in the past.

The "sense of shape" arises in the infant's first experiments in using its own limbs, and in recognising similar attempts in other babes. The movement of human beings tells us much, as do the changes of shape in the objects with which we are familiar.

When the Royal Drawing Society was in embryo Sir Francis Galton discovered that the value of visualisation was practically unrecognised, no doubt because drawing has been almost entirely neglected in the schools. He urged that its development was the most pressing need of education.

The Royal Drawing Society has found out by its study of natural drawing, not only the value of visualisation, but, what is more important, natural methods of developing it.

In general, our conclusions are much the same as those arrived at in other branches of psychology.

A. 1. Memory is the power of reinstating the objects of past experience (as images) in the order and manner of their original occurrence.

2. The securing of the attention is necessary to the training of the memory, for the degree of attention directly affects mental retention, recall and recognition of images.

3. Attention is a uniting process because it gives the relationship of objects or their parts; in fact, a series of connected images.

This much we have discovered from Elementary Snap-shot Drawing.

Furthermore, Intermediate Snap-shot Drawing has given many examples of the important fact

B. That the images impressed on the senses associate themselves one with another.

Lastly, Advanced Snap-shot Drawing has played a most important part in showing

C. That all other mental states are but combinations of the images of sensations in some form or other, especially in connection with the practical imagination, emotion and sentiment, literary appreciation, the beautiful rhythm to be observed in the working of natural law.

The result of many experiments with natural drawing shows that every one of us has a considerable stock of visualisations which may be coaxed out by a suitable lead.

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This is especially true of visualisation of scenery which has been looked at with interest in past years.

For example, in my lectures to teachers on the science of scenery simple experiments in actual denudation are drawn from recollection after thoughtful observation, and this practice has great power in reviving mental pictures of similar effects observed in former years.

Curiously enough, this drawing of one's own mental pictures is simpler, more expressive, and more distinguished in style than that which is attempted with a scene actually in view. This would seem strange if we did not prove by other experiments that thoughtful, comprehensive knowledge of structure produces the best drawing.

For example, an object looked at without scientific method in observation is never as well drawn as when carefully felt over without being seen, as in touch picturing. We are apt to think we know all about what we see, when we do not by any means.

Both manner and method in observation must be really good in order to produce excellent drawing.

We find that the snap-shot method, by insisting on the drawing of each stage of observation from recollection—that is, the visualisation of the object when out of sight—obtains the best results.

In other words, we must look and think systematically and produce the visualisation so obtained without having distracting and irrelevant details in sight, as they confuse and distract us from matters of more vital importance.

Visualisations or mental pictures are influenced by association with the images of the other senses. The young chick who pecks at everything does not peck at the cinnabar caterpillar when he sees it for the second time, as the image of its unpleasant flavour comes up in his sense of taste, and warns him not to try a second experiment.

A curious example of the revival of a sound image is shown in the case of a small boy who, when looking at a picture of a shipwreck and lightning flashes in the storm, asked, "Why does it not rumble?"

Suppose you are awakened in the night by the smell of dense smoke, what image comes at once to your mind?

The Royal Drawing Society has made many experiments to discover the effect of images of other senses on visual images or mental pictures.

A bunch of violets held to the nose of blindfolded boys produced in most cases a drawing of a bunch of violets; but one boy drew a sparrow, because the flowers happened to touch his nose, and the sense of touch overpowered the sense of smell, for he thought he felt feathers, and, being a London boy, a sparrow was the bird whose structure he knew best.

It is very interesting to study the images formed by all the senses, as the psychologists say that no thought is possible except in association with a mental image of some sort.

One mental picture will bring up another with which it has been associated, and this is the basis of intermediate snapshot drawing, of which the following is an example.

When a boy stood before a class bending down as though ready for another boy to play leap-frog, the boy unseen was better drawn than the bending boy who had been in sight.

We have gone still further afield in the most stimulating work of advanced snap-shot drawing, for in it we excite sentiment and emotion in order to produce visualisation without any lead being given by an object in view.

In this we procure the recall of the images of any or all of the senses. For example: out of sight a door is unlocked, and a child's voice is heard saying, "Don't lock me in that dark room; my mother is dead. I'll be a good boy." The door is slammed, and the child then says, "The stars are shining, and my mother is up there." Then comes a horror-stricken cry, "What bogie is coming from that dark corner?" The child, dying of fright, whispers, "I knew you would come to fetch me, mother."

Taste and touch can give very exact mental pictures, as when lumps of chocolate have been put into the mouths of blindfolded boys, who have drawn the shape of the lump in good perspective with the name of the maker indented on it.

The sense of touch develops in the babe at a greater rate than any other. In his eating, the touch of the tongue assists the taste in the identification necessary to form an effective image.

Experiments do not always work out as the results are foretold. For example, with a strong smell of lavender in the room a girl out of sight is heard asking a lady, also out of sight, to buy her flowers. The mental picture so evolved, when drawn, shows a girl selling violets to a fashionable dame. The artist who produced this picture said lavender was smelt distinctly, but it was the correct thing to say, "Buy my sweet lavender."

Thought transference in drawing measures a teacher's capacity in conveying definite visualisation to the minds of others.

The more clear-cut and definite the teacher's visualisations, the more easily they will be conveyed to the minds of others.

We have had a competition among general teachers during the past autumn, and those competing sent us a description of their visualisation in the first place, and the words or other means which they were to use to convey it to the minds of their pupils; then the pupils' work was sent in. The most successful set was obtained by a teacher of geography.

You will now understand our great interest in natural drawing, which is easily the most important expression of the power of visualisation. Our experience has taught us that the young are quite keen to use their senses both in learning the world around them and in storing up those mental pictures and other images which the psychologists tell us are the basis of all thought.

The management of keen observers requires tact; it is like personally conducting a tour into a new country, in which the members of the party are not at all agreed as to where they want to go or what they want to see. Fortunately, the younger members of our 70,000 young people are somewhat tied down by inability to walk far or talk. Still, they have means of expressing their feelings, and in their more tranquil states give evidence that they are using the vivid senses with which they have been endowed to record their sense impressions, that is, images, of their surroundings.

Much as we would like to study all the sense impressions of young people, time and circumstance restrict us to observing the nature of their visualisations, and these have much in common. Movement invariably leaves its mental picture in the baby's mind, and what appear to be wild scribblings to the uninitiated are very often the visualisations of curling steam, dashing water, flying sparks, and the like.

The charm of this early work is that it is an entirely self-invented means of expressing the mental pictures in the baby's mind. He does not get much beyond his home environment. At first mental pictures of the home life appear in such subjects as the swish of the angry cat's tail, soda-water squirting out of the syphon to mix with grandmother's milk, the whirl of the sewing machine. In walks abroad he sees the puffer with its curling steam, but he gets a chimney by and bye, and perhaps a boiler; the match-like legs of the horse begin to have a bend in them and a hoof at the end; the cat gets a head as well as a tail, though still the legs may be very indefinite.

Nothing delights so much as a live animal. It is curious to note how the young seize on the most distinctive feature. Indeed, if they are allowed to draw those parts of the animal that strike their fancy first, they always want to make a complete picture of him with suitable adjuncts before they finish.

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Fellow creatures begin to interest quite early in life—the younger baby's face when he cries or laughs; father digging in the garden; mother carrying letters to the post; other children undergoing the ordeal of a bath; in fact the remarkable scenes of the home whether they pertain to fellow creatures or to animals, come out as depicted visualisations, more complete in each year of advance in age, by increasing in accuracy of detail.

It depends on the home as to the range of distinct visualisations. The sporting parent gives a bias in favour of horses and dogs; the farm—hay-making, harvesting, sheep shearing, and the like.

Town life gives us buildings, tramcars, motors, the children of the nursery, the recreation grounds, and sometimes the street arab himself.

To watch this bias in a particular direction is full of interest as showing the natural disposition of the child.

Girls differ from boys in being more appreciative in their drawings of home life. This year one illustrated the fact that in winter they "get up at night," or go to bed with a candle. Boys give special attention to the big machinery of the world—the engines, ships, etc. There is no great difference between boys and girls, however, in the love of animals.

To review the information which we have gained from these studies, it would seem that the drawing of pictures or pretty patterns for sale, in spite of a prevalent popular belief, is the lesser part of the influence which drawing exercises on our mental activities.

Firstly and undoubtedly it aids the growth of the power of visualisation by making more precise and accurate our mental pictures.

It only remains to point out in what way young people who develop this power at school may make use of it in the work of their after life.

The botany, zoology, nature study, geography, geology, mathematics and chemistry, which are now so well taught in schools, require the drawing that is helpful in storing up correct visualisations for use not only in examinations, but by those who become doctors, lecturers, or school teachers.

A mind filled with mental pictures of our fellow creatures is the better able to give living teaching in history or literature, or to illustrate with true sentiment books of romance, of home life, travel, or the more worthy episodes of country life.

Natural decorative composition can be utilised to make pleasing patterns, which tell as designs for invitation cards, covers of magazines, and the many other ways of introducing a worthy object to those whose support is necessary for the successful working out of that undertaking.

Expert draughtsmen who can understand and show the meaning of structure are welcomed by scientific men in every profession, for these require exact and well thought out drawing.

Drawing is the best, and indeed only, language for conveying a vast amount of knowledge—at the beginning of life as well as in the years of maturity.

We have various means of aiding this.

All diligent pupils can pass the various stages of the Society's school examination. Many get the full school certificate by gaining Honours.

Some obtain a fine exhibition record, which is duly set forth on a card which the king himself praised for its artistic beauty.

Encourgement is given to clever pupils to work on for the Teacher-Artist Certificate.

Those who are successful as artists and teachers are elected members of the Royal Drawing Society, and are entitled to put "R.D.S." at the end of their name, by our Memorandum of Association.

Thus the whole of our work forms a graduated series of steps in training that will surely satisfy the Teachers' Registration Council itself.

This training, in being natural, is like that which developed the most successful epoch in the art of the world.

The history of Art demonstrates this, and likewise shows that to copy the conventions of other artists is to lose touch with nature itself.

Nature is always superior to those who endeavour to fathom its beauties or its mysteries.

DISCUSSION.

Mr. Thompson: I am a teacher of engineering drawing and am rather interested in this lecture from that point of view. A lot has been said about engineering. You say you find that the best students of engineering are those who have been trained in that way, who look for details, and not in copying drawings. In the early stages of education in that particular way a great deal of harm was done by allowing students simply to copy drawings, and since the newer system has been adopted they make parts themselves.

I should like to ask this question. Is the student under this system to be left entirely alone, or how far is the instruction to go—how far is the student to be led?

Mr. Ablett: The student is not to be left entirely alone. There are many boys who are keen on machines, and in studying them there will be times when there is something they do not understand, that they want certain information about. Then is the teacher's opportunity to give that information. The teacher need not overburden the young people by giving much more than they can digest. The important thing is to give help at the right moment. There will then come a time when further information will be wanted. Roderic Hill began to draw engines at the age of two. He was very enthusiastic, and his father, who is a mathematical professor, helped him; but he was so keen that if he was at a station and he saw an engine which he did not quite understand he would walk on to the platform and examine the engine for himself.

Perhaps Mr. Maginnis, who is an engineer, may be able to help you further in this matter.

Mr. J. P. Maginnis, A.M.I.C.E., M.I.E.E.: I have examined a good many of the mechanical drawings which have come to the R.D.S., and find that in many cases the boys are not really taught what they are drawing. They perhaps make drawings from a gas-engine or other piece of machinery, but they are not taught to scale them properly, to give each part its true value: they put a square where they ought to put a hexagon, they draw the screw threads from the left hand instead of from the right hand, and so on. A teacher who knew his work could easily put the boy right. A teacher in a general school will not teach the boy everything. I am not above learning; I feel every day I can learn something. The school teacher who teaches mechanical drawing can help the boy in the elements without trying to go into the science of the machinery. Drawing, to my mind, is absolutely essential to the engineer. I was once asked by a small boy, the son of a clergyman, what was the use of the drawings of machinery. He could not see any use. I explained to him that when his father wrote his sermons he put his thoughts down on paper, and expressed himself that way. The engineer puts his thoughts down on paper in the manner of lines. If that drawing is passed on to another person who can read it no writing is needed to explain it.

The value of snap-shot drawing to an engineer is almost infinite. I go into a workshop and look at a complicated piece of machinery, note the different parts, and months afterwards I can sketch that machine and remember to this day the details of the machinery because I made a drawing of it. The best way of impressing a topic on one's mind is to write it in words or, better still, in drawing. I therefore hold that the system of the R.D.S. is doing work in the right direction. I have watched its proceedings for several years, and take a very keen interest in it. I do not know whether I have satisfied Mr. Thompson.

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Mr. Thompson: If a boy cannot do a task that is set him, must the teacher make him do it over and over again until he can do it? My impression of your method is that the boy should be left to find out things for himself.

Mr. Ablett: It is a question of practical teaching. Sir Oliver Lodge said this afternoon that the worst thing a teacher can do is to give an impossible problem to the student. Give him a problem that he can work through successfully. If he cannot do a thing, get back to a subject that he can manage. I myself, if I find that I have given an impossible subject, I go back and give something possible to the student, something within his scope. Then I know I can succeed if it is worked out properly.

SHEFFIELD HOUSING SCHEMES.

THE Estates Committee of the Sheffield Corporation have decided to erect 261 houses at Wincobank for the accommodation of munition and other workers at the East End of the city.

The Emergency Sub-Committee which was appointed to deal with the question reports that the scheme for providing 285 houses on the High Wincobank Estate has been reduced to 261 houses, and the Sub-Committee have obtained a tender from a number of local builders, acting in combination, for the erection of such 261 houses for the sum of £75,000, the houses to be completed as to 127 in three months, up to 200 in four and a half months, and the whole to be completed by July 31 next.

This tender shows an appreciable increase beyond the prices paid by the Corporation for similar houses before and since the war, and under these circumstances the Government were asked, through the Ministry of Munitions, to make a substantial contribution towards the cost. After several interviews and correspondence, the Ministry made an offer of 20 per cent. of the total cost of the erection of the houses and 20 per cent. of the cost of the street and sewer works, and other expenses, estimated to cost £11,500.

The City Treasurer reports that this contribution is not sufficient to cause the rents of the houses to meet all outgoings. The Sub-Committee, however, consider that in the special circumstances of the case it is desirable that the houses should be erected, and they therefore recommend that the tender of the Sheffield contractors above referred to be accepted. They also recommend that the necessary street and sewer works be carried out.

The statement of the City Treasurer shows that if 48 of the houses are let at 6*s*. per week, 21 at 8*s*. 2*d*. per week, and 12 at 8*s*. 9*d*. per week, and the money for the land and houses was borrowed for 60 years, and for the sewers and street works for 22 years, there would be a deficit of £966 13*s*. 8*d*. for 22 years and £272 8*s*. 7*d*. for 38 years.

Sheffield is about to have spent at least £259,697 within the city for the housing of munition workers. Of this quarter of a million the Government will find £201,997, leaving the city to raise the comparatively small balance. The figures are made up as follows:

Temporary dwellings	£184,697
Wincobank houses	75,000

Plans and specifications have been prepared by the City Architect, and approved by the Ministry of Munitions, for the erection of temporary dwellings, consisting (in each case) in part of houses and partly of hostels and colony blocks, on sites near Petre Street, at Tinsley, and near Tyler Street, Brightside. These sites are estimated to provide accommodation for 4,631 workers.

For this work the following contracts have been entered into by the Lord Mayor and Town Clerk, representing the Corporation on behalf of the Minister of Munitions, in accordance with the latter's request: Messrs. R. Costain & Sons, Liverpool, £42,585; Messrs. F. D. Cowieson & Co., Glasgow, £50,520; Mr. F. T. Walker, Sheffield, £49,647; Messrs. Dawson & Jones (Sheffield), Ltd., £41,945.

Other expenditure will, of course, be incurred in respect of water and gas supply and roads and sewers, &c.

The whole of the cost of these three temporary housing schemes will be defrayed by the Government, but the services of the officials of the Corporation in relation thereto will, as previously arranged, be given without charge.

The Sub-Committee also express the hope that further accommodation for munition workers will be provided by the adaptation of existing unoccupied premises in Sheffield. The work is now being carried out by Mr. E. M. Gibbs, in conjunction with some of the principal armament firms in the city.

RAPID BUILDING.

ON Tuesday last the Trussed Concrete Steel Company of America erected the larger of two temporary buildings the Company have presented to the Y.M.C.A. for the duration of the war, situated upon a site in Buckhold Road, Wandsworth, in the record time of ten hours on previously prepared concrete foundations. There were present, Mr. Ogilvy, representing the Y.M.C.A.; representatives of Mr. Raymond Unwin; the Ministry of Munitions (Explosives Department); "The Architect," and Technical Journals, Ltd., also Mr. R. Shield, Mr. Hamilton Edwards, Mr. W. Brow, Mr. H. P. Alton, Mr. H. Farquharson, and Messrs. Black, Gardner, Robins, and Stevens, who were received by Mr. James M. Lawrie, the London manager for the Company, in the smaller building which was erected last week. The large building measures 64 feet by 20 feet and 7 feet 10 inches high to the eaves. The buildings are sent in sections in crates complete in every detail, including the frame, trusses, ribs, doors, windows, straining bars and tools ready for immediate erection.

The sections are each 4 feet by 7 feet 10 inches in stamped steel having four panels bossed on each, and are fixed together, internally, by means of wedged pins fitting into tenoned tee-pieces at regular intervals on the vertical sides of the panels. The bottom edges are fixed to a plate running horizontally in the concrete base by means of screws, while the head is splayed to receive the steel-roofing sections, which are alternated in twelve and six feet lengths with an ingenious waterproof interlocking connection. The trusses are braced both horizontally at sides and diagonally from top to bottom of each at centres.

Finally the flooring is fixed upon joists spiked flush with the sole plate, and where required the building is lined and ceiled internally.

The structure was commenced at 9.30 A.M., and the four walls, trusses and bracing were completed by 3.30 P.M., and by sunset the workmen were well on with the roofing. The various representatives expressed themselves intensely interested with Mr. Lawrie's demonstration of what is really a remarkable innovation, having a real portability—inasmuch as it can be taken down as easily as it is erected and removed away, or to another site—while the reduction of time, labour and, therefore, the cost involved in the erection of temporary buildings for war and other purposes very much appealed to them.

The hall is proposed to be used immediately as a rest hut for the East Surrey Regiment, and concerts and lectures are in course of arrangement under the auspices of the Y.M.C.A.

AMONG the openings now found for women in places previously filled by men is that of employment as tracers in drawing offices. A course of training of this kind has been in operation at the London County Council Shoreditch Technical Institute for some months, and about fifty women have undergone training.

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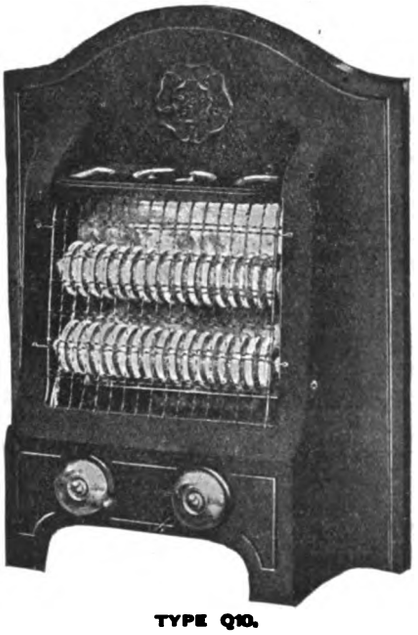
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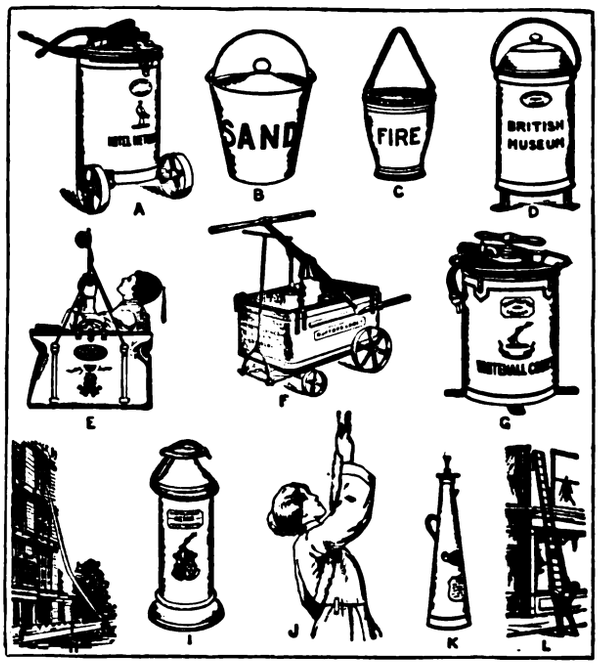
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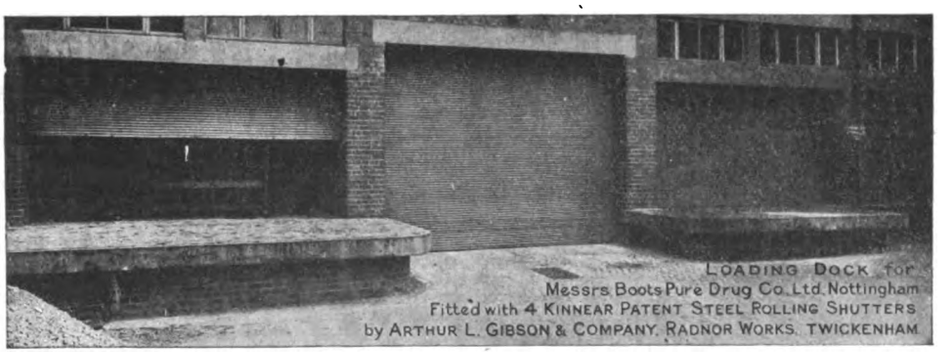
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Correspondence

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Architects and Munitions of War.

SIR,—The Royal Institute has been informed by the Ministry of Munitions that there is a serious deficiency in the supply of skilled men for work in munition factories, and that this deficiency is particularly marked in respect of tool-setters. The demand for such skilled workers is altogether greater than the supply at the present time, consequently it is imperative that suitable men should be trained at once for the extremely accurate work of setting up automatic and semi-automatic tools. It is necessary to train men for this purpose to a very high degree of accuracy. In the case of the manufacture of machine-guns the limits are in the neighbourhood of one ten-thousandth part of an inch.

The experience gained from the professional men who are already assisting in this work proves that the most suitable men to be trained are of the more highly educated type. Arrangements have accordingly been made by the Ministry of Munitions for training men of this type. Such men will be given a course of training lasting two or three weeks, during which they will be paid £2 a week, and they will then be drafted straight into factories where they are most urgently required, and where they will be paid the standard rate of wages for the district for tool-setters. This rate varies from £3 10*s.* a week to £5, according to the district.

The Selection Committee of the Architects' War Committee have been informed of this need, and have the matter before them in connection with the War Service forms of those architects who are over military age or unfit for military service.—Yours, &c.,

ERNEST NEWTON,
President R.I.B.A., Chairman Architects' War Committee.

January 8.

Scottish Sculptors.

SIR,—It is proposed to place on view at the forthcoming annual exhibition of the Royal Scottish Academy (open from May 6 to September 2) a selection of the works of deceased Scottish sculptors.

As the productions of those sculptors have, in the course of years, got widely scattered, the President and Council would feel greatly obliged if anyone, or any secretaries of institutions owning or having knowledge of works by the undernoted, which might be available for such a purpose, would kindly communicate with Dr. Pittendrigh Macgillivray, R.S.A., here, or at Ravelston Elms, Murrayfield, Edinburgh, defining in each case the material used.

The sculptors referred to are:—

James Tassie.
William Tassie.
Samuel Joseph, R.S.A.
Laurence MacDonald, H.R.S.A.
John Henning, H.R.S.A.
Patric Park, R.S.A.
Alex. Handyside Ritchie, A.R.S.A.
William Brodie, R.S.A.
T. Stuart Burnett, A.R.S.A.
Sir John Steell, R.S.A.
John Hutchison, R.S.A.
Clark Stanton, R.S.A.
W. Calder Marshall, R.A., H.R.S.A.
D. W. Stevenson, R.S.A.
George A. Lawson, H.R.S.A.
John Mossman, H.R.S.A.
George E. Ewing.
James Fillans.
Alexander Brodie (Aberdeen).
Thomas Campbell.
George Macallum.

—Yours, &c.,
WM. D. M'KAY, *Secretary.*
Royal Scottish Academy, Edinburgh: January 7.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

ENGLAND.

DORSET.

Weymouth.—No. 30 St. Thomas Street: additions and alterations. Mr. G. A. Andrews, architect, 157 Dorchester Road. Mr. J. A. Parsons, Ltd., contractor, Royal Hotel Yard (£691).

ESSEX.

Braintree.—Two pairs of villas, Chapel Hill, for Mr. E. Warren.
Manor Works: additions, for Messrs. Lake & Elliott.

LANCASHIRE.

Blackburn.—Wesleyan Church: school and chapel alterations and improvements.

Blackpool.—Garage, Beechfield Avenue, for Mr. C. E. Tatham.
Garage, Lytham Road, for Mr. J. H. Birtwistle.
Four houses, Brierley Avenue, for Mr. T. Brierley.
Six houses, Brierley Avenue; also houses and shop, Leckhampton Road. Mr. J. Hodgson, builder, Milbourne Street.
Two houses and two garages, Read's Avenue. Mr. J. Whiteside, builder, No. 48 Buchanan Street.
Four houses, Grange Road. Mr. E. Mason, builder, Broughton Avenue.
Two houses, Ripon Road, for Mr. J. Palmer.
House, Victoria Terrace: additions, for Miss Cooper.
Laundry, Johnson Road: additions, for Mr. E. Whiteley.
Stables, Bloomfield Road, for Mr. J. Cardwell.

Chorley.—Public baths (£10,600). Messrs. Woodhouse & Howard, architects, R.I.B.A., 88 Mosley Street, Manchester.

Clitheroe.—Proposed Council schools, Chatburn and Henthorn Roads.

St. Anne's-on-the-Sea.—Proposed floral hall, in the Ashton Garden.

LINCOLNSHIRE.

Lincoln.—"Recruiting Sergeant" p.h., The Straight and Well Lane: rebuilding.
Warehouse, Spa Buildings: reconversion into house, for Mr. H. K. White.
Moulding shop, Foster Pit, for Mr. R. Acton.

Skegness.—Miners' Home (£10,000). Mr. P. B. Houfton, architect, Market Place, Chesterfield.

NORTHUMBERLAND.

East Cramlington.—P.M. Church. Messrs. Harrison & Ash, architects, 14 Grey Street.

SOMERSET.

Flax Bourton.—Long Ashton Union Workhouse: additions and alterations to school buildings. Mr. Hine, architect (£10,500).

STAFFORDSHIRE.

Cannock.—Mission Church: proposed enlargement.

SUSSEX.

Eastbourne.—No. 2 Elms Buildings: addition, for Swift Beef Company. Messrs. Mark Martin & Sons, builders, 1 Cornfield Terrace.
"Prince of Wales" Inn, Seaside Road: proposed alteration. Mr. W. Bassey, architect.
"Central" Cinema," Seaside Road: proposed alteration. Mr. A. Ford, architect, 7 Gildredge Road.
"Durley," The Avenue: addition. Mr. P. D. Stonham, architect, 58 Grove Road. Messrs. Bodle & Addison, contractors, 1 Langney Road.
"Elm Tree," The Goffs: addition. Mr. G. Jennings, Ltd., builders.
Two houses, Charlston Road. Mr. S. Box, architect, A.R.I.B.A., 89A Terminus Road. Mr. A. V. McCann, contractor.

YORKSHIRE.

Churwell.—Five houses, Granny Avenue. Mr. T. A. Buttery, architect, 1 Basinghall Square, Leeds (also at Morley). Separate trade contractors (£1,320).

Harrogate.—Nos. 10 and 10A James Street: additions and alterations. Mr. A. A. Gibson, architect, 5 Prospect Crescent.

Hull.—Newland Avenue: additions, for Mr. R. Foster.
Neptune Street: additions, for St. George Motor Engineering Company.
Bournemouth Street: additions, for Needlers, Ltd.
Store, St. Silas Street, for Alpine Company, Ltd.

Southowram.—Warehouse, for Mr. J. C. Bottomley.

WALES.

Maes-y-cwmmer.—School, Hengoed. Mr. D. Pugh-Jones, architect, County Hall, Cardiff.

SCOTLAND.

Aberdeen.—"The Residence," Spital: alteration, for the Church of Scotland Institutes of Pastoral Training.
Premises, George Street: additions, for the Northern Friendly Society. Mr. J. Cameron, architect, 381 Union Street.

Rathven.—Parish Hospital: proposed extension.

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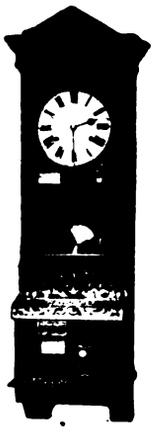
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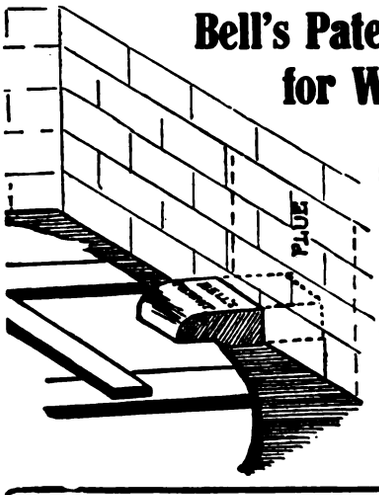
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THE ARCHITECT

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FORTHCOMING EVENTS.

Monday, January 24.

Victoria and Albert Museum: University Extension Lecture XIV., on "Belgian and Dutch Renaissance Architecture (1500-1900)," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Wednesday, January 26.

University of London: The first of six lectures on "War Memorials," by Professor S. D. Adshead, M.A., F.R.I.B.A., at University College, Gower Street, W.C., at 5.30 P.M.

National Federation of Building Trades Employers of Great Britain and Ireland: Annual General Meeting at Holborn Restaurant, at 10.30 A.M.

Thursday, January 27.

British Museum: University Extension Lecture XV., on "Roman Architecture (B.C. 100—A.D. 300)," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Friday, January 28.

Civic Arts Association: Public Meeting at the Mansion House.

REINFORCED CONCRETE.

THE publication of the Regulations made under the provisions of Section 23 of the London County Council (General Powers) Act 1909, with respect to the construction of buildings wholly or partly of reinforced concrete, naturally directs attention with particular emphasis to this method of building. These regulations were made by the London County Council on July 6, 1915, confirmed at the meeting on July 13, 1915, and the common seal of the Council was affixed on the 16th of the same month. The regulations were finally approved and allowed by the Local Government Board on September 8, 1915, and came into force on the first day of the present year.

Although the regulations apply only to the County of London, it is more than probable that they will be adopted throughout Great Britain, because they contain the most detailed requirements of any official regulations in the world, and because they have also received the approval of the Local Government Board. This approval will almost certainly induce local authorities throughout the British Isles who may intend to apply for loans upon buildings of reinforced concrete construction to follow the regulations which the Local Government Board have already approved. Hence the influence of these model regulations is likely to be far-reaching, and so will concern not only practitioners in the County of London, but architects and engineers throughout the kingdom.

Reinforced concrete construction has already established its position in England, particularly for buildings of utilitarian character, bridges, warehouses, factories, and even for structures in which utilitarian considerations are not of such primary consideration, churches, schools, and other erections. Indeed, we may be said to have well passed the threshold of the cement and steel age of construction.

It is well to consider some of the peculiar characteristics of this latest newcomer amongst methods of construction in order to realise its effect upon the art of architecture. Perhaps the most salient of these characteristics is the monolithic nature of a building of reinforced concrete. It would be entirely foreign to this nature to treat the external surface of such a building in the manner favoured by many architects when they are endeavouring to give a picturesque aspect to a modern house, by following the steps by which many an old building has attained that character by differentiation in the use of material, and employ a combination of brick, stone, plaster, half-timber and tile-hanging on different parts of the same structure. The monolith connotes unity and breadth of expression, and these qualities a reinforced concrete building must possess if it is to be artistically satisfying.

A second characteristic of reinforced concrete is its suitability for cantilever projections, a characteristic which has already proved of immense value in many utilitarian structures. There is scarcely any limit, in reason, to the possibilities of reinforced concrete cantilevers. Oriels and corbelled features of all kinds can be appropriately introduced without any of the hidden subterfuges employed in masonry, from the inverted arch or oak timber tailing down of mediæval times to the rolled steel joist of our own. The same quality renders possible in planning the placing of walls over voids to an extent, without extravagant cost, to which the favourite resource of the unskilful planner, the rolled-steel joist, possesses, relatively, a truly puny potentiality.

Another characteristic of reinforced concrete construction is that its economical employment usually implies a structure of two distinct elements—a skeleton framework of weight-carrying members, beams and pillars, and a filling-in between these of panels of very considerably less thickness, the relative diminution of which may be gathered from the fact the regulations of the London County Council permit that "any external enclosing walls of reinforced concrete between such pillars may be of any thickness not less than 4 inches, provided that such enclosing walls are designed and constructed in accordance with these regulations to resist any loads and pressures they may have to carry." It may be noted that there is no restriction as to the form or shape of the enclosed panels in the external walls; they may run from top to bottom of the façade; they may be narrow or long, due consideration being, of course, given to the necessary beams from pillar to pillar that the exigencies of weight-carrying in the structure may demand.

A question that will require much careful consideration from the architect who desires to engraft an artistic conception upon his reinforced concrete building will be the treatment of surface. He will scarcely be content to leave the concrete as it appears when the form-work or shuttering is removed. No doubt enthusiasts for so-called truthful building, if any such remain from the disciples who imbibed or have inherited the tradition of the nineteenth-century Gothic revival, would be disposed to contend for such procedure, on the plea that any covering-up or modification of the crude concrete surface would be deceptive and untruthful; but most of us nowadays have learnt the lesson from Nature that the clothing of skeleton construction is her universal method

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of providing not only protection, but pleasurable sightliness.

The variety of treatments that may be accorded to the surface of crude concrete is already of considerable extent, and doubtless, as we become more familiar with the use of reinforced concrete, many more will be evolved. We may, by the use of the scrubbing-brush or the sand-blast, remove part of the external coating of cement, leaving the particles of "coarse material" exposed and clean. For still stronger effects, some of these particles may themselves be removed, though such removal must not deprive the reinforcement of the minimum of "cover" that the regulations require. Possibly such surface treatment would not offend the susceptibilities of the truthful building school. Covering or clothing the crude concrete admits of a limitless range of opportunity from whitewash or rough-cast to the costliest of marbles, and somewhere within this range will probably be found the most numerous experiments in the artistic treatment of reinforced concrete surfaces. We should be inclined to omit from the list of suitable covering materials those of metal, as they are in the essence of their nature too greatly divergent from that of concrete and also present many difficulties in the manner of attachment.

In the working of reinforced concrete there are certain precautions that are essential if satisfactory results are to be obtained from its use. One of the most important of these forms the subject of the first of two "Notes" which are appended to the L.C.C. publication of the regulations. "The efficiency of reinforced concrete construction greatly depends upon continuous supervision being given to the execution of the work to ensure that the regulations are uniformly complied with." This undoubtedly, presuming the completeness and the correctness in respect of mathematical accuracy of the regulations, is of prime importance, but the continuous supervision needs to go further and must ensure also careful and accurate workmanship in all operations of reinforced concrete construction. It is useless by means of regulations and correct calculations to provide for the necessary amount and right position of the steel reinforcement, if this is allowed to be disturbed from its intended alignment by careless workmanship. No amount of mathematics will render reinforced concrete safe if the "effective depth" of a beam is reduced by a careless or clumsy workman. The continuous supervision must ensure that careful workmanship which at all stages is of paramount importance.

Some other necessary precautions are, in our opinion, insufficiently recognised by the L.C.C. regulations. Thus, Section 5 very rightly requires that "No part of the reinforcing metal in a building shall be used for conducting electrical currents." The action of electrolysis upon reinforcing metal in a building is a subject of which our knowledge is at present limited, but at least sufficient is already known to point to a very possible danger, and every precaution should be taken to prevent the electrolytic action of fugitive and escaping electric current.

The regulations do not, we think, emphasise sufficiently the necessity of caution in the removal of formwork or centering. There are no stipulations as to the time at which this may or should be done. The only possible suggestion lies in the requirement of Section 172 that "Loading tests shall not be made until the expiry of ninety days from the date of laying the concrete." In a recent number of "The Architect" we gave an extract from a bulletin of the experimental laboratory of Illinois University, which showed clearly the important influence upon the increment of strength during the hardening of concrete exerted by temperature. This influence also affects the compressive resistance of concrete at various periods as required by Sections 159 to 162 of the regulations, but no recognition of that influence appears.

Grading of the "coarse material" of concrete, it is now known, plays an important part in the strength of concrete, and information on this point has been given in our pages. The regulations recognise the importance of grading, but only vaguely, by stipulating in Section 154 that "The coarse material shall be varied in size as much as possible between the limits of size allowed for the work."

We are of opinion that the amount of cover for the reinforcement required by the regulations is a minimum that may in practice be wisely increased for the protection of the steel work from both fire and damp. Indeed, we are inclined to take the view that the regulations as a whole are based far more insistently upon the mathematical than the operative desiderata of reinforced concrete practice.

Those architects and engineers who desire to have the text of the regulations in a handy form will find them included, by permission of the London County Council, in a little handbook* by Mr. E. S. Andrews, just published by B. T. Batsford, Ltd. This handbook also contains some useful explanatory notes on the text and assistance in the calculations required by numerical examples and graphs.

MODEL OF ARBROATH ABBEY.

AN interesting attempt to show Arbroath Abbey with its ranges of buildings as standing in 1411 is here illustrated. The model is the work of Dr. W. J. Dewar, of Arbroath, who has generously offered it to H.M. Office of Works, with a view to its being placed in the sacristy.

The model is about one-hundredth in scale, one in 96 to be exact. The measures were taken from Miller's History of Arbroath and its abbey, and a picture of the building done by a Mr. Lawson, and a very good one by a Mr. Aitken, both architects, gave an excellent idea of the structure in its original condition. The model is made of wood, painted over with reddish brown paint mingled with sand, which represents fairly the old red sandstone of the building. The roofs which had been partly of lead, and partly of wooden shingles, are made of thin cigar-box wood, and painted a bluish grey. The abbot's house which still exists is pretty exact, and the height of the dormitory is known, but the parts of which there seem to have been no precise information are the chapter-house, whose height has been merely guessed, the row of buildings forming the south side of the cloisters which have no remains, and the spire of the central tower, which may not have existed at all, but which was made like similar octagonal spires in Scotland, as at Old Machar in Aberdeen, and two spires still in St. Andrews.

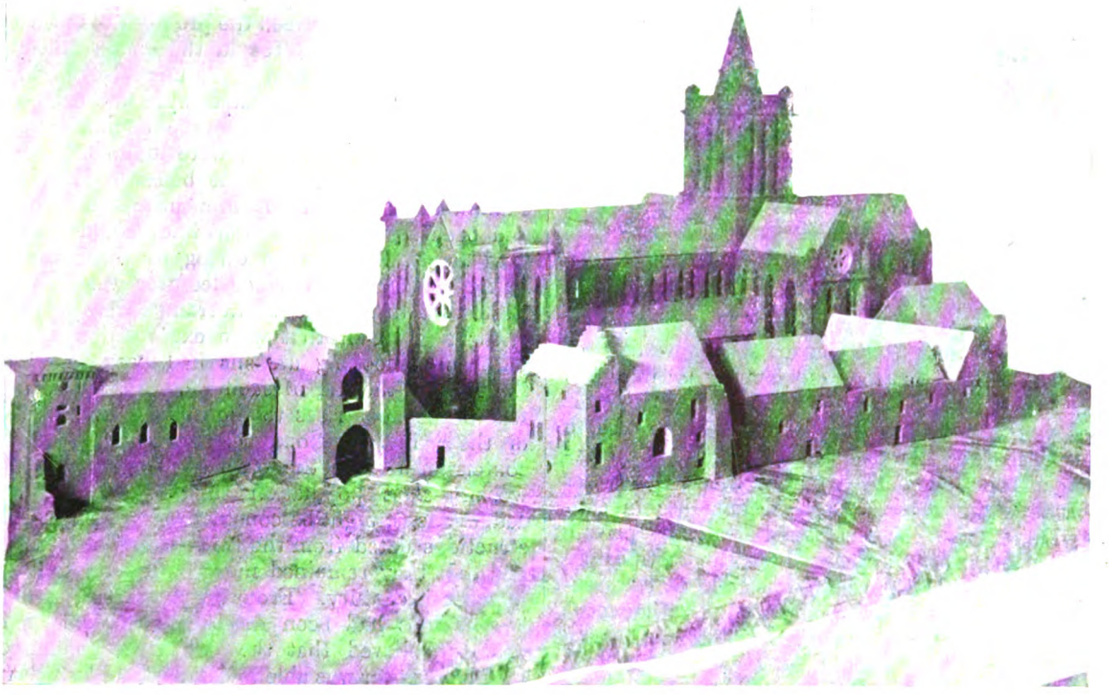
NOTES AND COMMENTS.

ARBITRATIONS are too often the cause of excessive costliness to litigants, for they usually deal with matters that are too technical and too complex to be readily grasped by judge and jury, and as the opposing parties often consider that their case needs the assistance of counsel learned in law and versed in forensic contests for its due presentment, interminable waste of time occurs in the usual procedure of evidence-in-chief, cross-examination, and re-examination, with innumerable side issues of no importance dragged in and across the main consideration. The example set in the case of the contract for the Usher Hall at Edinburgh is worthy of being generally followed.

It was somewhat exceptional in this respect that the arbitrator was endowed with the fullest powers by all the parties to do whatever in his opinion was necessary to thoroughly ascertain all the facts in connection with the various points in dispute. It was made a proviso that there was to be no clerk to the reference appointed,

* "The Reinforced Concrete Regulations of the London County Council." Made July 1915 under the London County Council (General Powers) Act, 1909, and now in force. A Handy Guide, containing the Full Text, with explanatory Notes, Diagrams, and Worked Examples. By Ewart S. Andrews, B.Sc.Eng., M.C.I., Consulting Structural Engineer. (London: B. T. Batsford, Ltd. 2*s.* 6*d.* net.)

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ARBROATH ABBEY.

no formal evidence led, and no counsel employed. By mutually agreeing to the above conditions the arbitration has been conducted at a very much less cost than would otherwise have been necessary if carried out either as an ordinary reference or by appeal to the Court.

The Corporation of Sheffield has resolved to adopt the scheme put forward by its Estates Committee for building temporary and permanent houses for munition workers on the Wincobank Estate and other sites. Councillor Bailey, in moving the adoption of the report of the Estates Committee, said since he had been chairman of the Committee they had come to the Council with three separate schemes, every one of which had been based on what was known as a financial basis and self-supporting. The only difference in the present scheme was that it could not be said to be absolutely self-supporting. The reason they came forward with the scheme was because of the war and national necessity, and because there was absolute need for housing in the city. Never in the history of the city had there been such a dearth of houses or had private enterprise been so far behind meeting the demand. There had never been overcrowding to the extent it existed to-day. The Government contribution was not quite as large as he should have liked it to be, but the Government and the city between them were committed to something like £300,000 to erect dwellings of one character or other to house workmen.

The assistance of the Government, a contribution of 20 per cent. of the cost, is due to the fact that Sheffield could claim that its scheme will assist the manufacture of munitions of war, the 261 houses to be erected being partly intended for the workers on munitions. This same fact also helped to restrict opposition to the scheme by members of the City Council.

At a general meeting of the Royal Irish Academy the Rev. H. J. Lawlor, D.D., Litt.D., read a paper on "The Cathach of St. Columba." In this paper was included the entire text of a MS. Psalter, the property of Mr. Thomas O'Donel, which is said to have been copied by St. Columba from a book lent to him by St. Finnian. In the introduction Canon Lawlor gave a full description of the MS., and argued in favour of the tradition that it was written by St. Columba. In support of this tradition evidence hitherto unnoticed was produced from the MS. itself that it was in some way connected with the famous monastery of Iona. The story of its production was also shown to have an exact parallel in a MS. of the Gospels—the exemplar of the Book of Durrow—written by St. Columba. On these grounds Dr. Lawlor dates the Cathach Psalter about the year 560. This date is confirmed by palæographical considerations, with which Professor W. M. Lindsay, of St. Andrews, deals in an appendix. Another appendix contains the fullest description yet written of the Cumdach, in which the MS. has been preserved for more than eight centuries, from the pen of Mr. E. C. R. Armstrong, F.S.A.

The Villa Achilleion, which is to serve as a hospital for Serbian wounded, under the care of a staff of British doctors and nurses, was built by the Empress Elizabeth of Austria, under her personal supervision, at a cost of £3,000,000. It is superbly situated above the azure Ionian sea, amid jungles of ever-blooming roses, palms, and tropical and native trees, and many of its 128 rooms are splendid with Pompeian and Byzantine decoration, the chapel being especially wonderful. There is a magnificent gymnasium, and the marble swimming bath and the stables are equipped in the most lavish way.

The Development Commissioners, in their report for the year ended March 31 last, state that there is likely at the end of the war to be a widespread demand for labour employing works, and they have therefore devoted themselves to the initial stages of projects of development which would, in their execution, have the effect of employing labour on a larger scale, and to exploring those preliminary engineering, administrative, and legal questions which beset and delay the actual start of work. Such schemes deal mainly with the construction of light railways, land drainage, land reclamation, and afforestation.

Considerable advances from the Development Fund have been recommended in aid of schemes for the increase of the production and preservation of food com-

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modities. The Commissioners have kept in view the desirability of providing, after the war, opportunities of agricultural work on a large scale, and upon conditions calculated to satisfy men who have been serving in the Army. The Commissioners have had under consideration several times the question of developing the beet-sugar industry in this country, and several informal proposals have been before them, but they have not been able to recommend any scheme which would both meet the legal requirements of the Development Act and be defensible on general financial and administrative grounds.

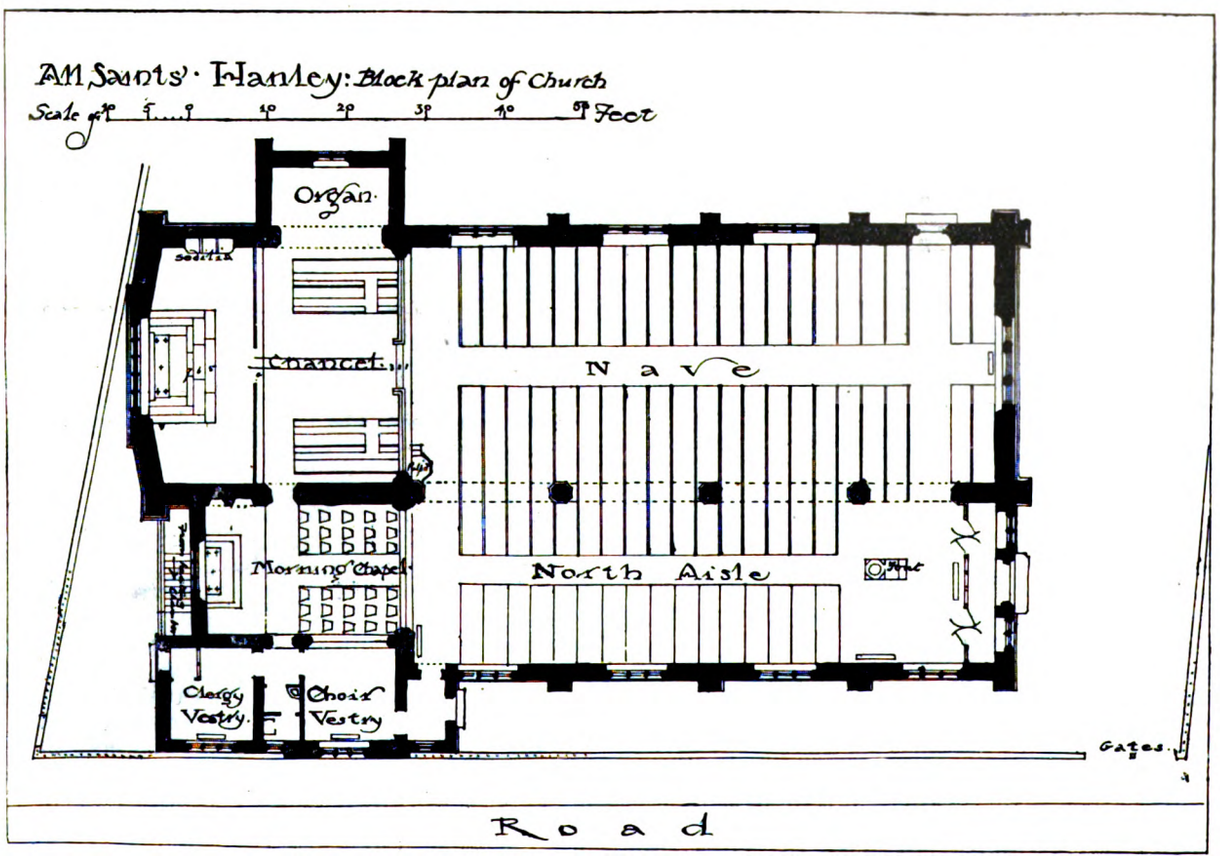
The Building and Estates Committee of the Stoke-upon-Trent Town Council have had to deal and have dealt generously with a difficult question for all public bodies that have the spending of public money. It was the old story of mistakes in competitive tenders, in this case for hot-water installation work. The line the Committee took was to shoulder two-thirds of the error of £90 which the engineers made in their estimate, whereby their tender was £174 lower than any other. Genuine mistakes in estimates should, we think, be recognised always by private employers, except in those cases where the rectification of the error would alter the relative position of competitive tenders. With public bodies the case is rather more difficult, but the makers of the error should bear some portion of the cost, and should, at least, forego their normal profit on the amount in question. Hence we characterise the action of the Stoke-upon-Trent councillors as generous.

Dug-outs, like many other expedients of modern warfare, are not new devices, and may be paralleled by the souterraines of prehistoric times. At a meeting in connection with the Belfast History and Philosophical Society Mr. Henry C. Lawlor, in a lecture on the subject of Prehistoric Dwelling-places, said souterraines had always been a subject of considerable mystery to archæologists, and it had occurred to him that much might be done to solve the mystery of their existence by a special study of some of the most perfect examples. As the floors of souterraines have through the progress of centuries mostly become silted up by soil oozing through the roof or sides, he prognosticated that much might be discovered by carefully excavating and examining under the present floor level. He described the progress of his work, showing the results discovered in the souterraines at Knock Dhu, Muckamore, Donegore, and elsewhere. A considerable number of remains were discovered, all of a domestic nature. In one case a number of broken crucibles and iron remains were found bedded in a deep layer of charcoal and burnt bones. This, on further examination, proved to be a primitive ironworks. It had been argued that souterraines could not have been used as dwelling-houses owing to their dampness and lack of ventilation, but the lecturer was able to demonstrate that in all cases souterraines were skilfully ventilated; and in all that were excavated a fireplace with remains of cooking utensils had been found buried in the floor at the end of each souterraine and at the point where the floor rises to the highest level. The results of these investigations seemed to make it clear that souterraines were the ordinary dwelling-houses of the working-class population; and by a series of logical deductions it might be conclusively proved that their constructions dated from the third to the seventh centuries, and that they remained more or less in use up till the fourteenth century. From the number of cases in which souterraines had been discovered in forts it had been usually believed that the two were contemporaneous, but the lecturer was able to demonstrate by what appeared to be satisfactory evidence that this was not the case, and that the ordinary ring forts so common in this country were of a much later date than souterraines. In two instances, while excavating in forts, it was discovered that the forts had been built upon the refuse heap of iron and bronze foundries.

ILLUSTRATIONS.

ALL SAINTS' CHURCH, HANLEY.

THE new work at this church, which has been lately completed, consists in the building of a large nave and



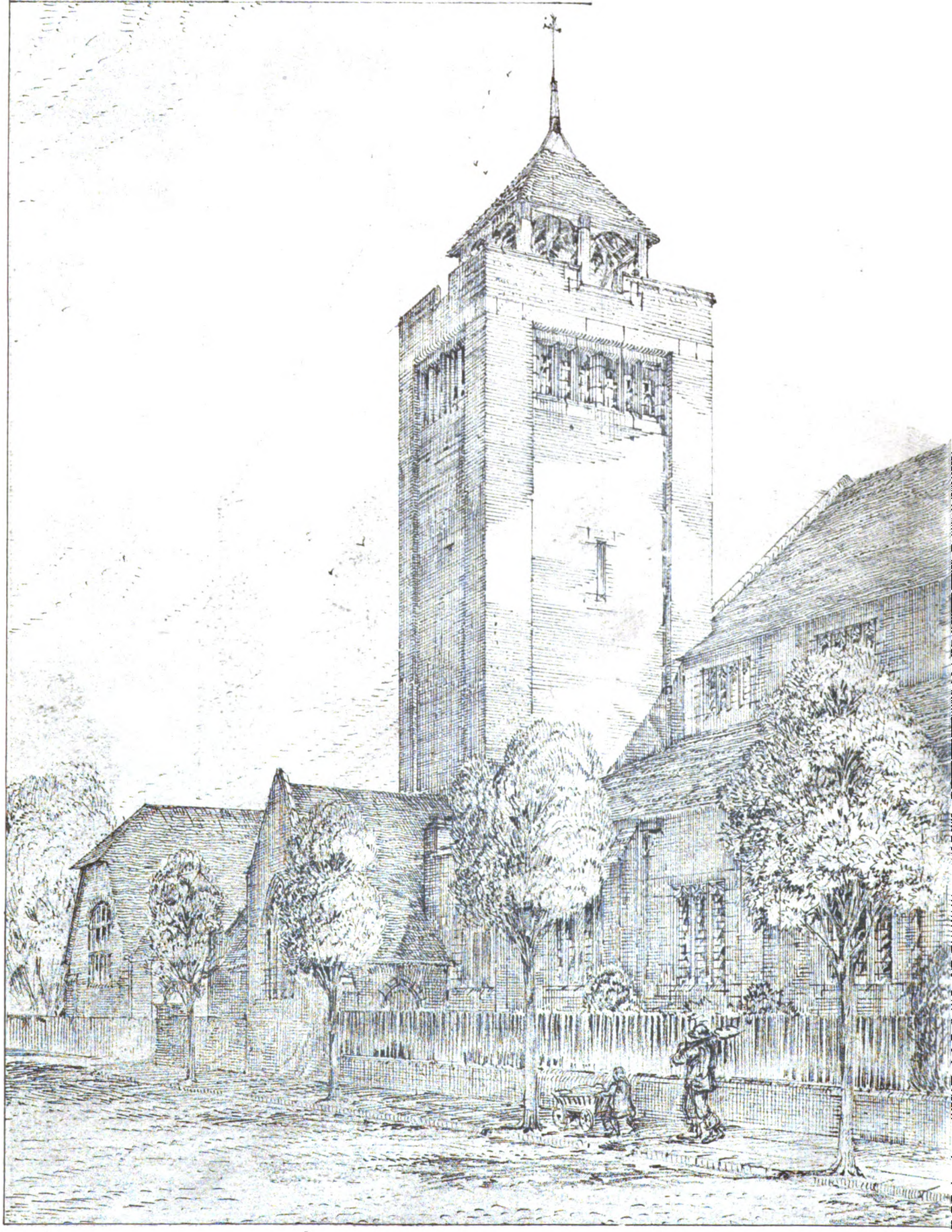
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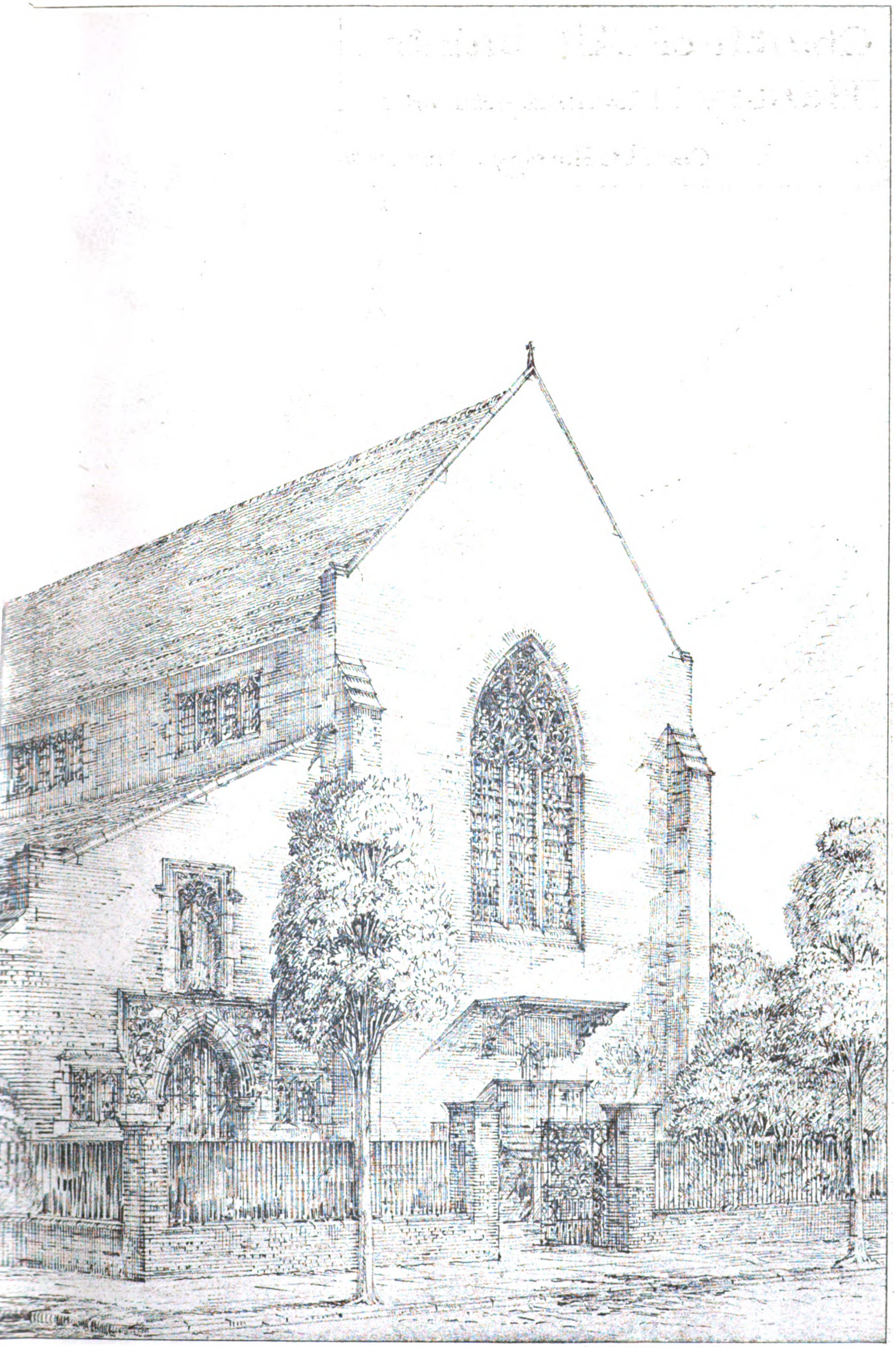
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Church of All Saints: Hanley: [Tower not yet built]

Gerald C Horsley: Architect.



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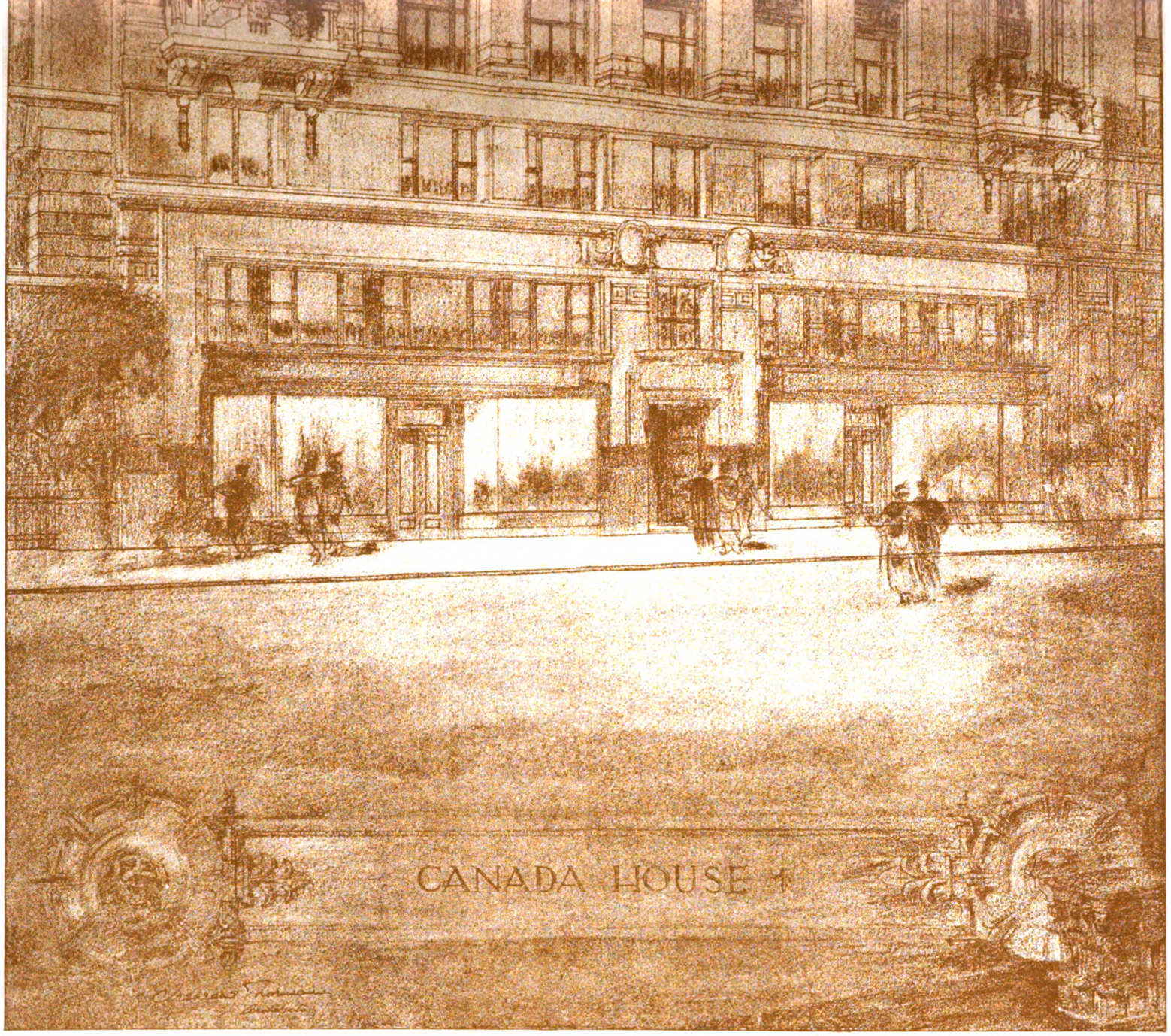
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CANADA HOUSE, KINGSWAY.

Messrs A. F. A. TREHEARNE and C. F. NORMAN, Architects.

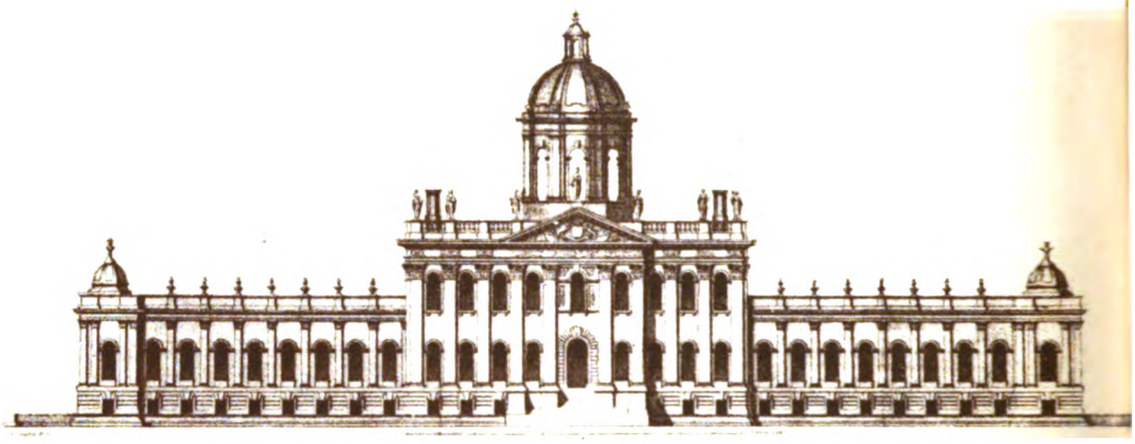
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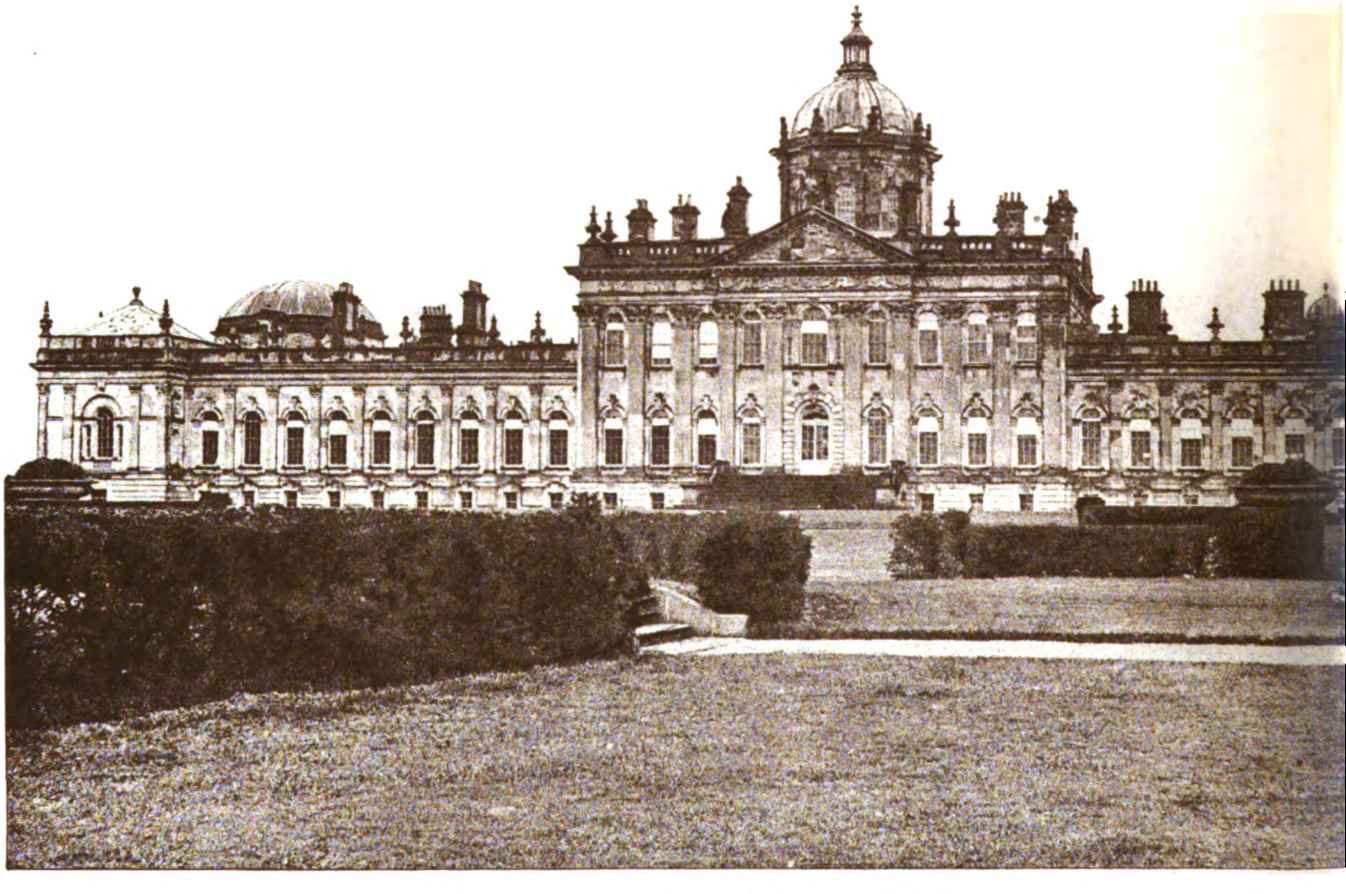
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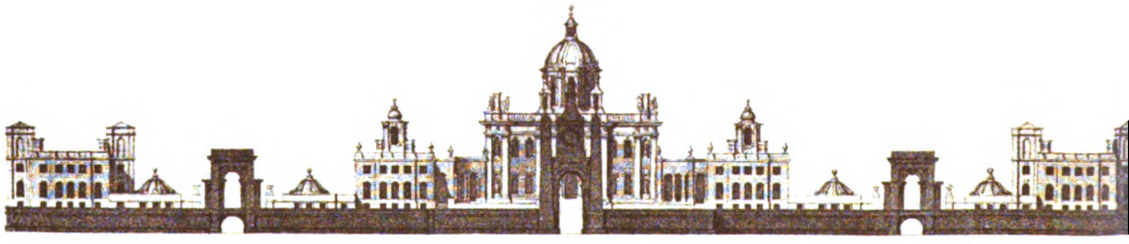
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GARDEN FRONT (FROM VITRUVIUS BRITANNICUS).



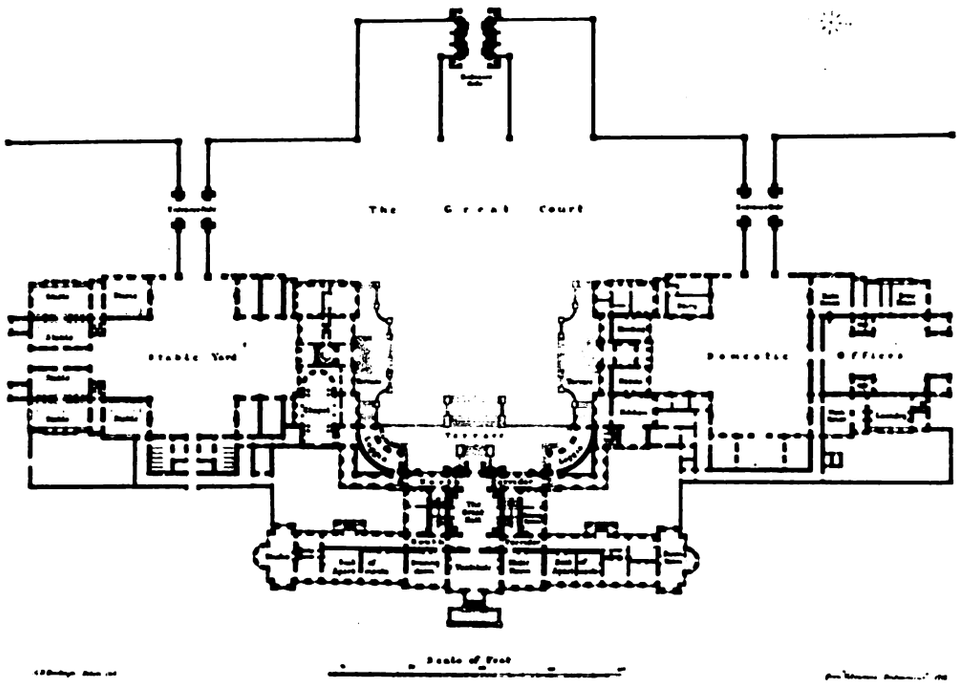
GARDEN FRONT (FROM PHOTOGRAPH).



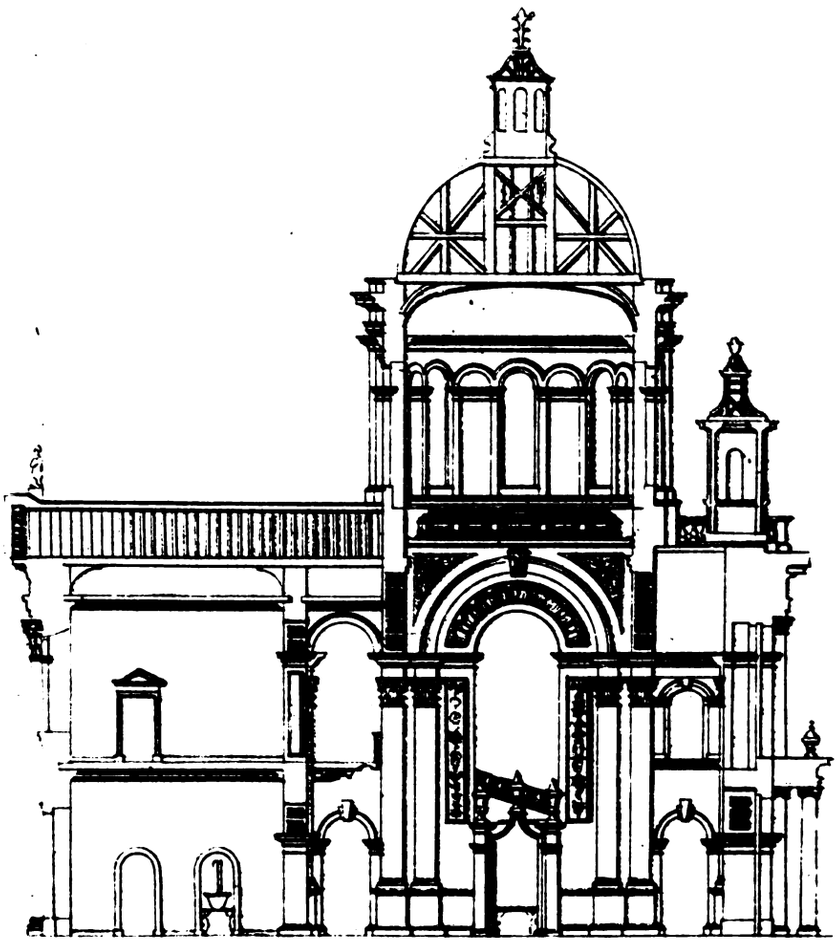
ENTRANCE FRONT (FROM VITRUVIUS BRITANNICUS).

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. General Plan of CASTLE HOWARD as designed .
. by the JOHN VANBRUGH .







The Section of Castle Howard.
Profil du Chateau D'Howard.

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21st 1916.

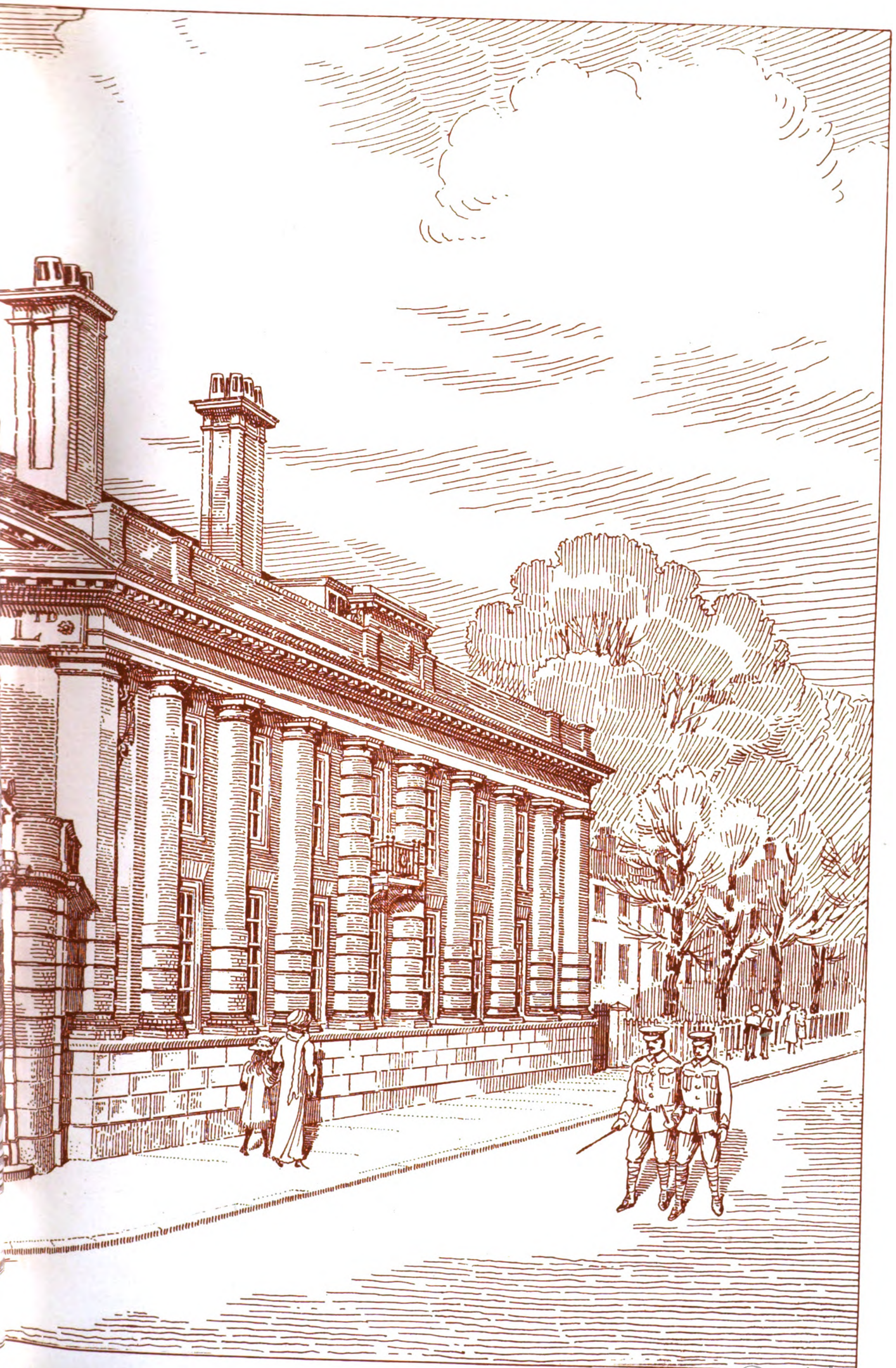


PHOTO-LITHO. SPRAGUE & Co Ltd 69 & 70 DEAN STREET SOHO W.

ER BANK, HARROW-ON-THE-HILL.

ER & SONS Architects.

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new vestries, &c., as an addition to the original church. This original building, which was erected about 1850, has been considerably altered and incorporated in the new scheme, so as to form a north aisle and morning chapel. It is intended at a future date to build a tower, which is shown on the drawing. The church is constructed in local materials, the facing bricks coming from Colwich, and the roofing tiles from Stoke-on-Trent. The architect of the work was Mr. Gerald C. Horsley, F.R.I.B.A., and the general contractor Mr. T. Godwin, of Hanley.

CASTLE HOWARD, YORKSHIRE.

OUR illustrations are explanatory of the paper by Mr. A. B. Burleigh on Castle Howard, and principally represent Sir John Vanbrugh's design. The photographic view of the garden front shows clearly the modification in design made by Carr.

LONDON COUNTY AND WESTMINSTER BANK, GREENHILL, HARROW.

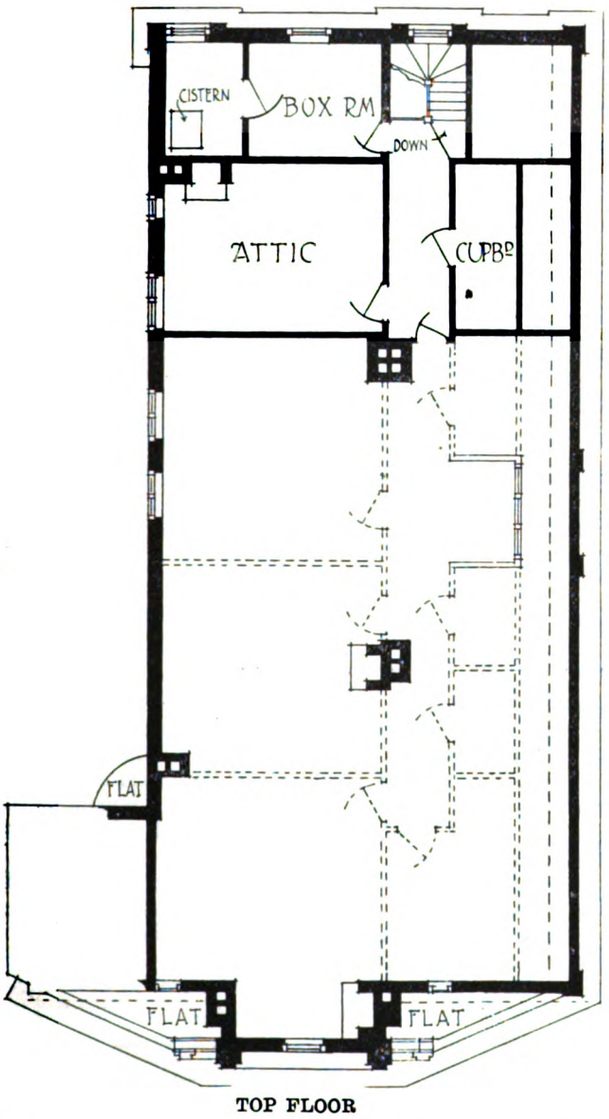
THESE banking premises have a frontage of 52 feet to Station Road, and 95 feet to St. Anne's Road, and the architects, Messrs. Banister Fletcher & Sons, had a very difficult site to deal with, as the meeting of the two roads formed an acute angle, and the new building line towards Station Road had to be set back a distance of 12 feet 6 inches to suit the requirements of the Harrow District Council. The architects, however, surmounted the difficulty in a somewhat novel way by the formation of a frontage line towards Station Road of a triangular shape with the bank entrance at the angle of Station and St. Anne's Roads.

The ground floor has a fine banking hall, 37 feet by 30 feet, waiting room, manager's room, book room, and strong room. A private entrance hall and staircase are also provided to reach the first floor, which forms the manager's residence.

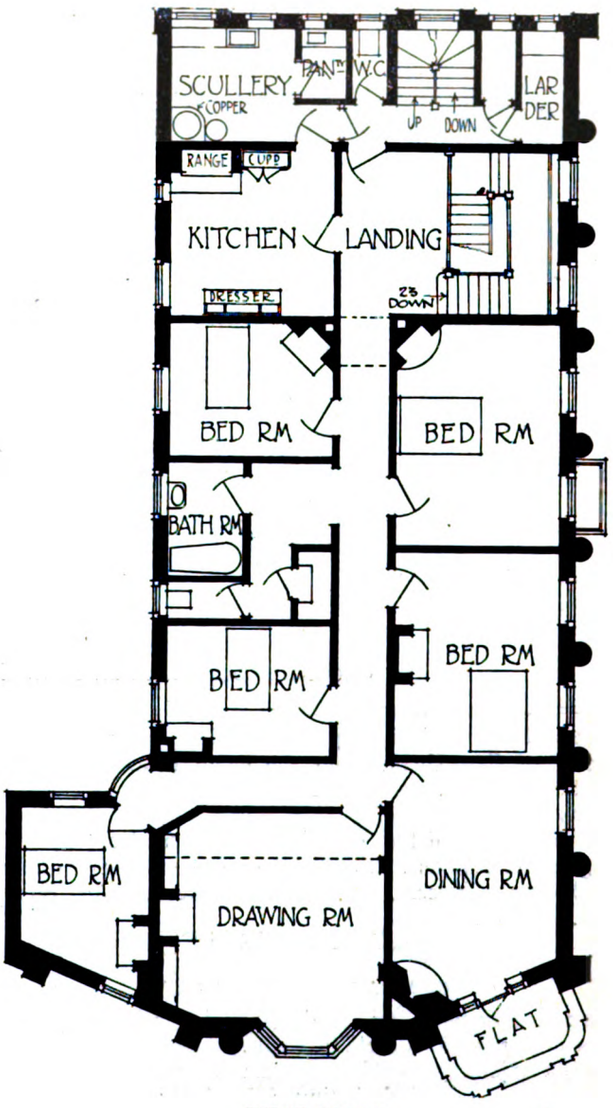
The bank is designed in the late Georgian style, in keeping with some of the older houses in Harrow, and a special attempt has been made to give interest to a brick design. Dignity is obtained by the tooled Peterhead granite base, on which is raised the superstructure of three-quarter columns, entablature and roof, which is of green Westmoreland slating in diminishing courses, while a feature is made of the symmetrical distribution of the chimney stacks on each façade. The pediment required at the end of the sloping roof fronting Station Road has been formed by bringing forward the central portion, as shown in the perspective, and flanking by side consoles, while the junction with the lower portions of the pediment are covered by the chimney stacks.

Messrs. W. King & Sons, of Watford, were the general contractors, and they have carried out the work in a very thorough manner.

The bricks, hand made and specially moulded, are 2 inches deep, cherry red for pilasters and columns, and plum colour for main wallings, and were made to the full-size drawings of the architects. The execution of this brickwork reflects great credit on Messrs. King & Sons. The carved brickwork has been executed by Messrs, Gilbert Seale & Son, and the bank fittings

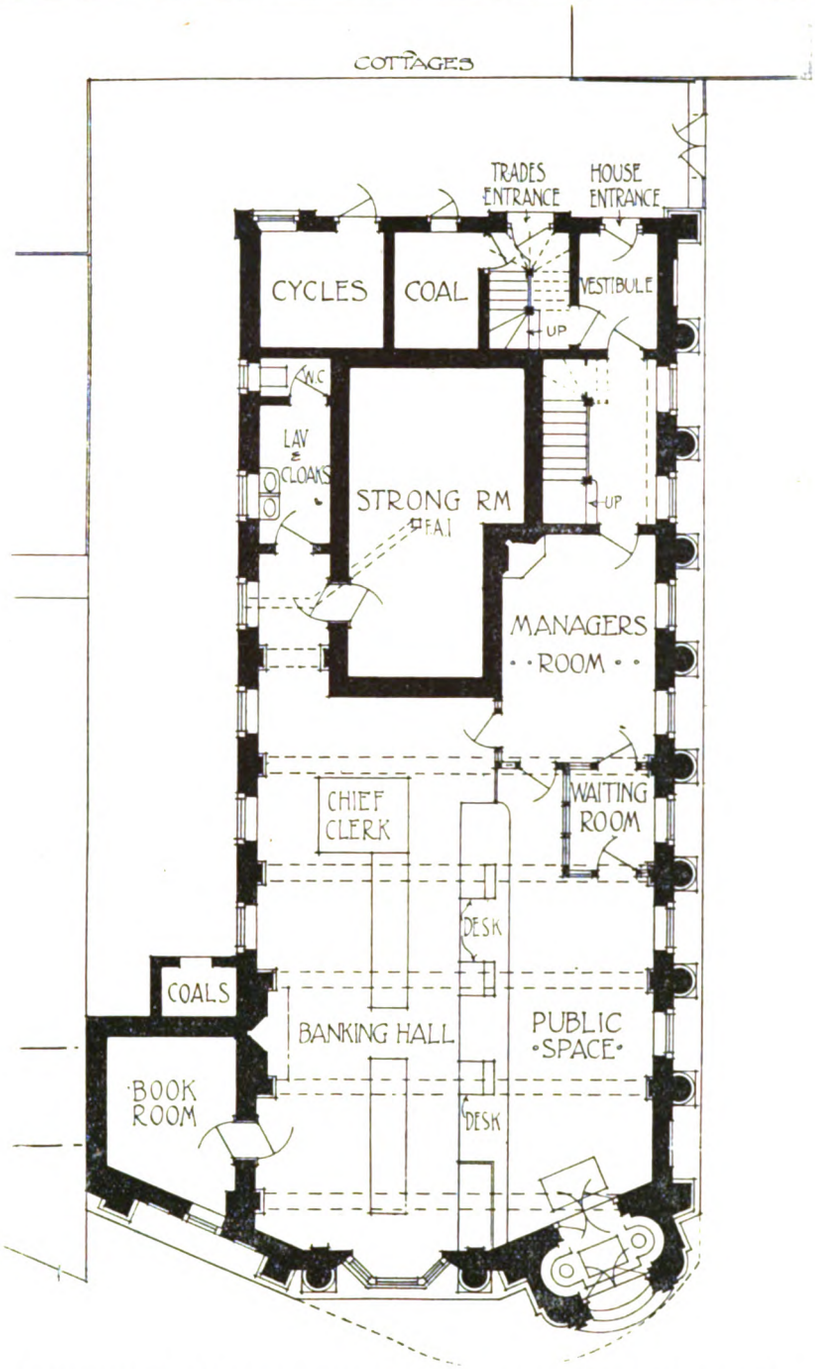


TOP FLOOR



FIRST FLOOR.

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GROUND FLOOR.—LONDON COUNTY AND WESTMINSTER BANK, HARROW.

and cashier's desks in Japanese oak by Messrs. Elliott & Sons, of Caversham, from the detail drawings of the architects. Mr. W. Falkner acted througout as clerk of works.

The whole of the work has been carried out according to the designs and under the superintendence of the architects, Messrs. Banister Fletcher & Sons, FF.R.I.B.A.

CANADA HOUSE, KINGSWAY.

THE conditions ruling the designs of this building were the necessity, to a certain extent, of keeping the design to the adjoining building, India House, by the same architects, and of designing a front for a building of eight storeys above the ground floor, in view of the purpose to which the building was to be put—viz., modern offices.

As much shop-window frontage as possible was required, and it would have been a grave disadvantage to have broken up the window space with a number of piers. The architects considered that the four massive piers which are provided supply an ample base for the heavy structure above, whilst the shop-fronts being brought out right to the face of the piers in their opinion adds to the appearance and stability of the building.

As this treatment also has the advantage of reducing the cost of the stonework and adding to the value of the shop premises from a display and rental point of view, there seems to be a very great deal to be said for it.

Internally the building is arranged in open floors to be divided up into offices as required by tenants. The premises contain a floor-space of something approaching two acres.

Messrs. Trehearne & Norman were the architects, and Messrs. Wm. Taylor & Co. (Hammersmith), Ltd., the general contractors.

THE Corporation of London has obtained Parliamentary sanction for extending the time allowed under the original Act for the compulsory purchase of the properties needed in connection with the construction of St. Paul's Bridge. This step has been taken owing to the abnormal conditions. The negotiations in connection with the proposed new bridge have been suspended, and the City is re-letting on tenancies terminable at short notice many of the properties already acquired.

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AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—III.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

A SHORT stay at Göschenen well repays one, for apart from the agreeable and welcome change after the somewhat tedious railway journey from Flüelen, the opportunity is presented for a little exercise of the limbs.

Above Göschenen Station the St. Gotthard Road crosses the Reuss, the height at this point being 3,720 feet. The railway bridge and the north end of the



SCENE ON ST. GOTTHARD RAILWAY.

great tunnel are on the left, and a few minutes beyond Göschenen begins the two and a-half mile climb, flanked by giant and almost upright granite rocks, at the base of which roars the Reuss on its downward way.

The road winds up, and, passing the Lange-Brücke a little below the Göschenen waterworks, crosses the Sprengi-Brücke, 4,048 feet high.

There is a very perceptible decrease in the atmospheric pressure as the mountain is ascended, and in climbing mountains rapidly (more especially by means of mountain railways) the distinct diminution in the pressure is very clearly felt. The purity of the atmosphere stands in direct ratio to the height above sea-level, and the temperature is in inverse ratio to the height. The fall in the temperature averages among the Alps on the north side about 0.9° Fahr., and on the south side about 1.2° Fahr., for every 330 feet of ascent. On reaching the last-named bridge, the temperature having become very perceptibly lower than when the start was made, the few garments dispensed with at the beginning of the climb are certainly missed very much; but by the time one reaches the road crossing the Devil's Bridge (Teufels-Brücke), 4,593 feet high, these few garments are hastily donned again. The illustration gives a very fair idea of the situation of this bridge midst noble rocky surroundings. The river Reuss at this point falls into an abyss some 100 feet below, covering the bridge with a fine dewy spray, spreading for a considerable distance around by the strong breeze almost continually blowing at this altitude.

This bridge was built in 1830, and is of granite with one single span of 60 feet. The old structure, which existed some few feet lower down, and which was destroyed by a flood in 1888, was the scene of fierce conflicts in 1799, when the French were forced to retreat to the Lake of Lucerne before the Austrians and the Russians.

Andermatt, 4,738 feet high, which is the principal village in this valley, is some three and a-half miles from Göschenen, and if one is desirous of continuing the mountainous climb, the St. Gotthard Pass, 6,935 feet high, may be reached.

Some people are satisfied with very little in the way of mountain-climbing, and the writer, being numbered amongst those people, turned round after doing about 1,000 feet and wended his way back to the station to catch the next train through the St. Gotthard Tunnel.

One is quite content to take one's seat in the train again and enter the great St. Gotthard Tunnel, constructed in 1872-82 at a cost of about two and a quarter million pounds.

The express trains take about sixteen minutes, and the slower trains some twenty-two minutes, to pass through the tunnel, the length of which is 16,393 yards,



THE DEVIL'S BRIDGE, GOSCHENEN.

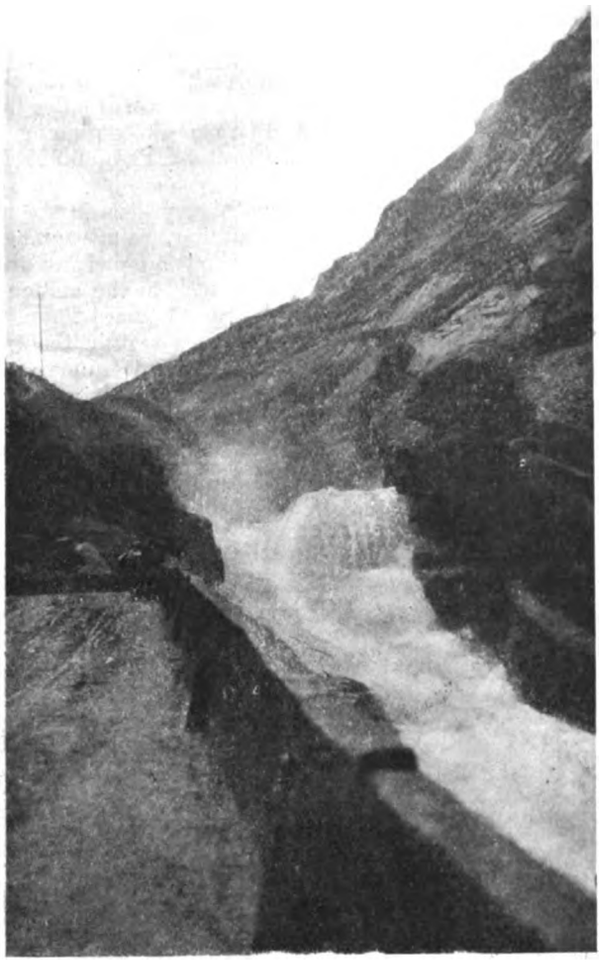
its width 28 feet, and height 21 feet, the central point being 3,786 feet above sea-level, from which level it descends on both sides—towards Göschenen about 6 feet in 1,000 feet, and towards Airolo about 2 feet in 1,000 feet.

Airolo having been reached, in the upper valley of

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the Ticino, the train descends and enters Stretto di Stalvedro, and, continuing, arrives at Rodi-Fiesso, a very fine summer resort.

The railway line from Rodi executes a series of most amazing figures, crossing the Ticino several times,



THE DEVIL'S BRIDGE, GÖSCHENEN.

passing through a series of short tunnels, and descends no less than 118 feet by means of a spiral tunnel, finally arriving at Faido, the capital of Leventina.

The scenery on this short journey can only be described as gorgeous in the extreme, and certainly worth all the travelling to see.

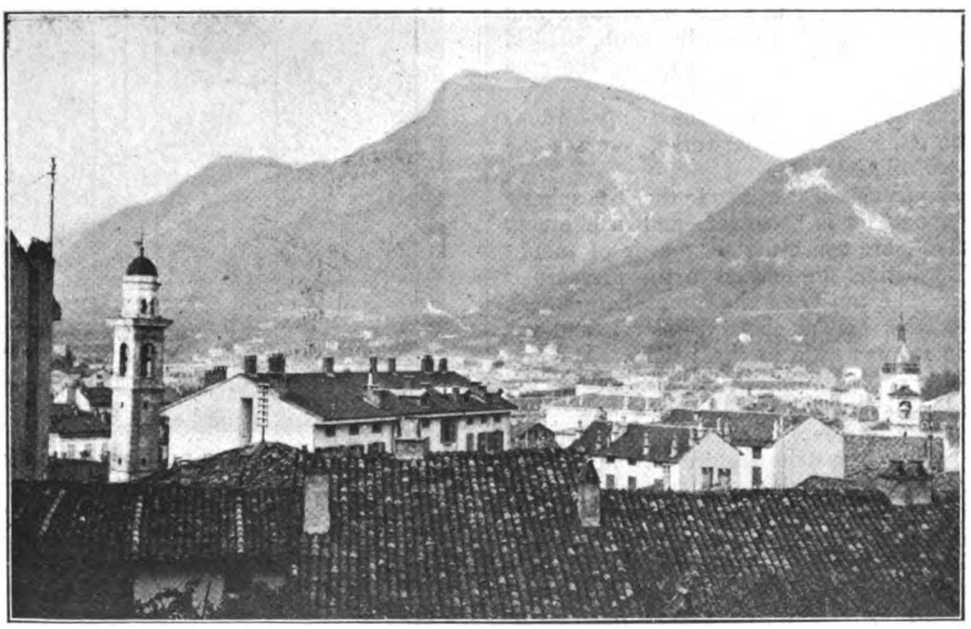
This little village, with a population of about 850, is about 2,465 feet above sea-level, and contains some very



IN LUGANO.

curious wooden houses attributed to the sixteenth century, including some quaint examples of carving.

Further beautiful districts are now entered, richly wooded with chestnut and walnut trees. On the banks of the Ticino numerous fairy-like waterfalls are to be seen

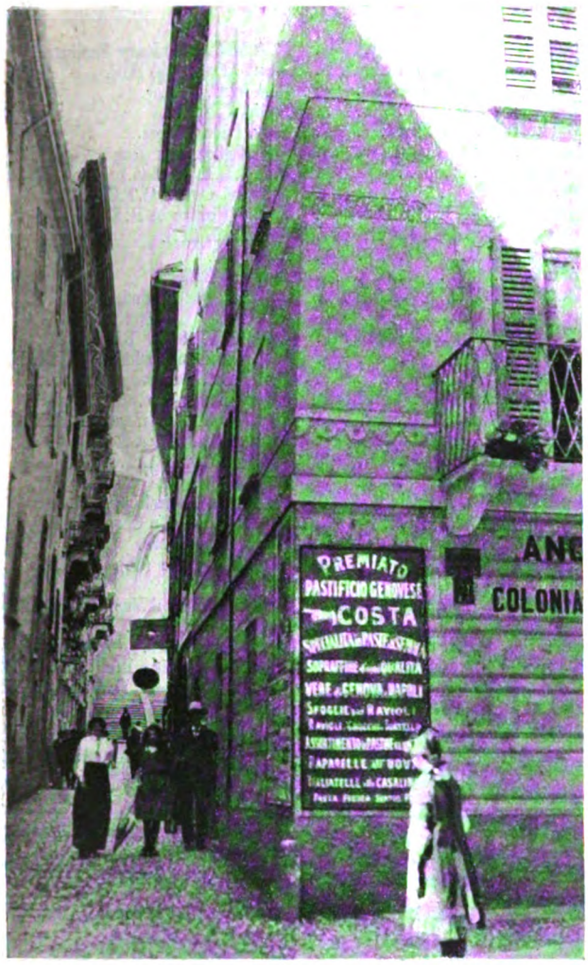


GENERAL VIEW OF LUGANO.

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falling over the face of the cliffs. Large detached formations of rock are dotted amongst the walnut trees. The railway descends a depth of some 230 feet by means of two spiral tunnels constructed one under the other somewhat like an elongated volute, passing the Biaschina ravine, where there is a fine waterfall formed by the Ticino forcing its way through the ravine.

The village of Giornico, with its vineyards, its old Lombard tower, and early Romanesque church; Bodio, with its large electric-power works; Biasca, another picturesque spot, and skimming the verdant east slopes of the valley, traversing two further tunnels, Bellinzona, a beautiful little town of about 5,000 inhabitants, is reached.



ONE OF THE MANY NARROW STREETS IN LUGANO.

This town in its older portions is quite Italian in character, and one could well spend a few days exploring its beauties. It is the capital of Canton Ticino, and has a fine abbey church erected in 1546. The fortifications were erected by the Dukes of Milan in the thirteenth to fifteenth centuries, and were finally restored by the Swiss in 1853. Some fine ruins are to be seen on the mountain slope.

After passing through more tunnels, ascending the Monte Ceneri and passing through many walnut and chestnut groves, still more tunnels, reaching Rivera-Bironico in the dale of Leguana, descending again and then ascending past Cadempino and Vezia to the Massagno tunnel, 1,135 feet high and 1,016 yards long, Lugano is at last reached.

The Lake of Lugano, only a small portion of which lies in Italian territory, is generally included as one of the Italian lakes. Those entering the Italian kingdom by way of the Austrian frontier are welcomed as it were by the beautiful Lago di Garda, which is purely Italian in character and therefore unlike the Lake of Lugano, but for their entrance gate into the lake district of Northern Italy, and more especially the lakes of Lombardy, those travelling from the north of Europe use the lake of Lugano.

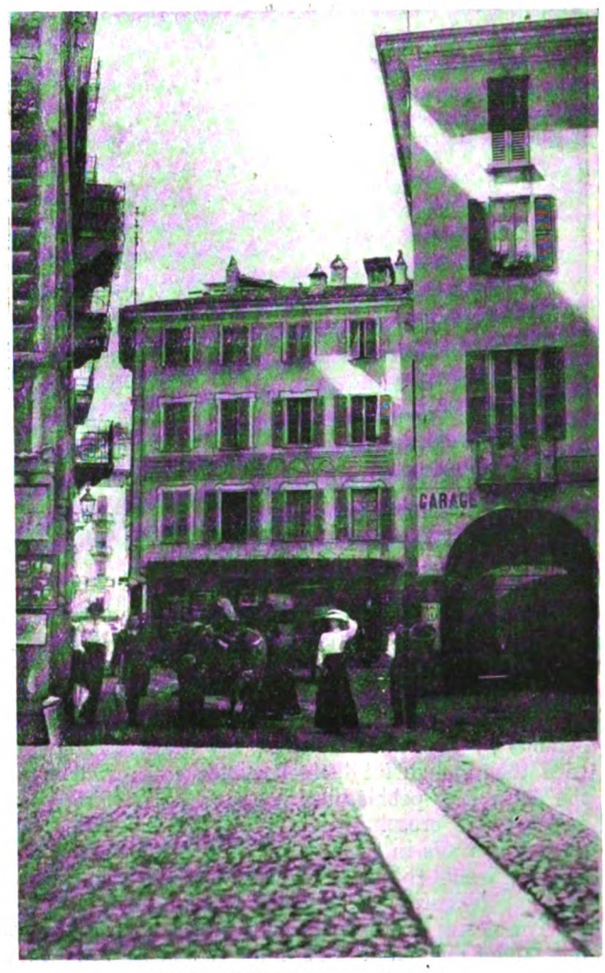
The reputation held by Lugano and its lake is due to a very large extent to the fact that they form the threshold as it were to a district rich in scenic beauty and possessing an almost endless fund of objects to the liker of the study of history, literature, mediæval art, and so forth. The beauty of this district is rendered even more striking by the fact that the traveller has just completed his railway journey from Basel (and very often without the diversion offered by the crossing of the Lake of Lucerne or by the short stay at Göschenen) through the St. Gotthard Pass, and the sudden change from the confined railway carriage causes such a feeling of extreme relief that the beauties of Lugano and its surroundings are likely to be exaggerated, although some would say that such is impossible.

Lugano strikes one as a particularly convenient little resting-place for quite a reasonable period. Certainly the best part of a week may be spent very profitably in exploring the beauties of this town and district.

The people were originally, one would suggest, Italian, but centuries of association with the German-Swiss, perhaps the most disagreeable and objectionable people in Europe, have accounted for the absence of much of that natural courtesy characteristic of the peoples on the other side of the Italian frontier.

Judged by the characters one meets in many of the narrow arteries in the older and largely business portion of the town, there would appear to be quite a large number of refugees residing here, whose misdeeds have rendered their sojourn no longer comfortable or desirable in their own beloved Italy.

The quaint little villages dotted about on the banks of the lake are, without doubt, exceedingly picturesque,



STREET SCENE IN LUGANO.

more especially if viewed from a reasonable distance, and even when quite close they present quite an artistic appearance, particularly when much of the squalor is

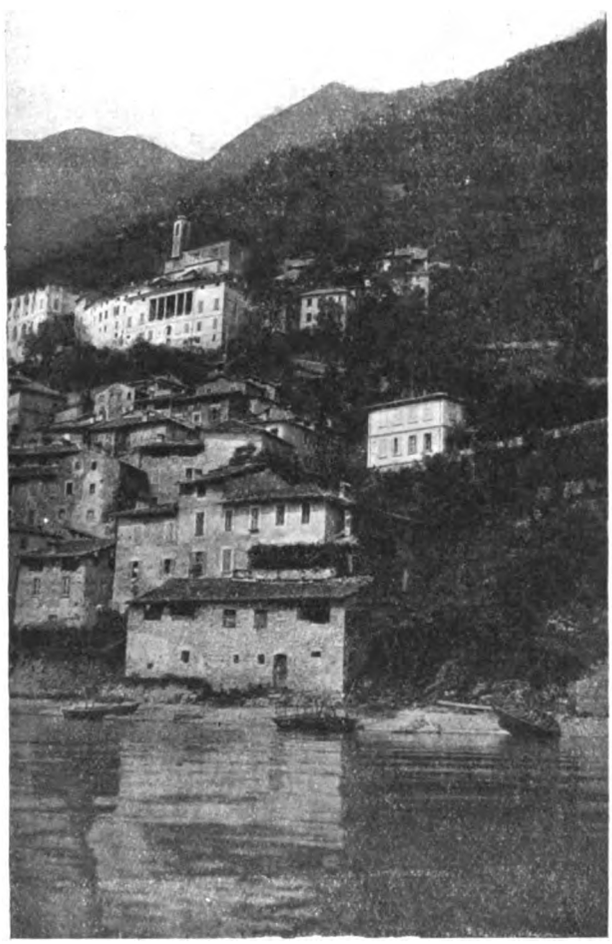
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hidden from view by the luxuriant growth of the vines and the flowers, as well as the chestnut and oak trees.

The beauty of the scenes is enhanced by the clustering together of fair numbers of dwellings, with their deeply shadowed eaves and their unique exterior painted frescoes, or the plain plastered walls, with the addition here and there of dummy painted shuttered windows.

In isolated positions the slender towers of their churches typically Italian in character, standing out clearly against the bright blue sky, or against the densely wooded mountainside backgrounds, add to the beauty of the scenes.

The villages when actually visited bear very obvious and unmistakable signs of the extreme poverty of the population, the members of which do not appear to be too anxious to work.



LAKE OF LUGANO.

On fine days, and there are many such in the Autumn, when the sides of the stately mountains are a mass of red and gold, with the brilliant cloudless sky above, casting deep shimmering shadows on the sparkling surface of the deep blue lake beneath, with the joyous life evinced by the inhabitants on the little landing-stages, with their delightful little lake-side cafes and terraces, the diminutive pebbled beaches, and fast-moving passenger-steamers crossing and recrossing the lake, leaving glistening trails in their wake, everything seems perfect, and one would think the dwellers in these parts were the especial favourites of dame Nature.

The desire on the part of the traveller to take away permanent records of the seemingly endless beautiful and striking scenes, makes it imperative that a good supply of films or plates should be carried during the little excursions. Films are to be preferred owing to their greater convenience in carrying and their lighter weight.

(To be continued.)

ROLL OF HONOUR.

The subjoined list of Architects, Architects' Assistants and Students serving in His Majesty's Forces is made up of additions and corrections to the names which appeared in "The Architect" of October 8, 15, 22, and November 19.

Abbott, A. L., 2nd Lieut.	Royal Engineers.
Andrews, A. G., 2nd Lieut.	Kent (Fortress) R.E.
Andrews, C. D.	238th (Army Troops) Co., R.E.
Armstrong, C. T., Sub-Lieut.	R.N.V.R.
Ashworth, A. B., 2nd Lieut.	2/1 North Midland, R.G.A.
Athron, T. S., 2nd Lieut.	21st West Yorks (Pioneer) Regt.
Atkinson, J. L., L.-Corpl.	Royal Engineers.
Atwell, F. L., 2nd Lieut.	Kent (Fortress) R.E.
Ayre, D. W., 2nd Lieut.	Kent (Fortress) R.E.
Ayrton, O. Maxwell, Flight Sub-Lieut.	R.N.A.S.
Bailey, A. H., L.-Sergt.	R.A.M.C., Sanitary Section.
Bailey, Gervase, 2nd Lieut.	Kent (Fortress) R.E.
Barefoot, L., Lieut.	R.A.M.C. (T.).
Barrow, T. H.	Artists' Rifles.
Beckett, R. T., Lieut.	Royal Engineers.
Bluhm, Q. M., Capt.	8th Manchester Regt.
Bownass, J. E.	P.P.C.L.I. (Killed.)
Bradford, S.	Inns of Court O.T.C.
Bridgen, C. H. E., 2nd Lieut.	Kent (Fortress) R.E.
Briggs, Martin S., Lieut.	R.A.M.C. (T.).
Brown, C. R.	R.A.M.C.
Bruce, R.	Artists' Rifles.
Butler, A. G. G., 2nd Lieut.	R.F.A. (Wounded.)
Caley, W. H., 2nd Lieut.	Queen Victoria Rifles.
Carey, Felix	20th London Fusiliers. (Killed.)
Carter, W.	R.A.M.C., Sanitary Section.
Chamberlain, R. P., 2nd Lieut.	Royal Engineers.
Chilton, E. A., L.-Corpl.	49th Field Ambulance, R.A.M.C.
Christie, E. J. A., Lieut.	11th Batt., Lincs. Regt.
Clarkson, E. S.	Inns of Court O.T.C.
Cockrill, K. A.	O.T.C.
Collins, S. H., 2nd Lieut.	3/4 Batt., Yorkshire Regt.
Cornwell, A. R.	2nd Div., Cycle Corps, R.E.
Croft, C., Lieut.	Royal Engineers.
Cuthbert, D. M.	Highland Fife (T.), R.G.A.
Daniell, G. F. B., 2nd Lieut.	6th Batt., Royal Fusiliers.
Dartnall, J. A.	O.T.C., R.E. Unit.
Davidge, H. E. J.	Royal Engineers. (Wounded.)
Davies, E. B., Lieut.	2/3 East Anglian Field Co., R.E.
Davis, H. G., 2nd Lieut.	1/3 Field Co., S. Midland, R.E.
Davis, P. W., Lieut.	Pioneer Batt.
Deacon, B. C., Capt.	2/1 Field Co., North Midland Div., R.E.
Dickinson, A. H., 2nd Lieut.	N. Midland Div. R.E.
Dickson, G. A. H., Lieut.-Col.	Worcester Regt.
Dinwiddy, T. N., Sub-Lieut.	R.N.V.R.
Dovaston, J.	R.N.V.R. (Anti-Aircraft Corps).
Dowdeswell, F.	Artists' Rifles.
Dowsett, S. C.	South African Veterinary Corps.
Eaton, C. W., 2nd Lieut.	11th Batt., Leicestershire Regt.
Edwards, J. R., 2nd Lieut.	Glamorgan, R.G.A.
Edwards, S. J.	Singapore Volunteer Reserve Force.
Elkington, G. Leonard	Artists' O.T.C.
Ellis, T. M.	Artists' Rifles.
Ellison, A. J. T., Driver	M.T., A.S.C.
Etherington-Smith, H. L., Lieut.	R.A.M.C.
Evans, A. F., Lieut.	2/5 Royal Welsh Fusiliers.
Evans, David, 2nd Lieut.	Royal Anglesea R.E.
Ewen, A. J. C.	Artists' Rifles O.T.C.
Fairer, W. C., Lieut.	R.F.A.
Falconer, Lake	4th Highland Mountain Brig., R.F.A.
Farrow, J. W. H., Corpl.	Border Company, South African Infantry.
Foster, G.	R.A.M.C.
Fox, A. R.	London Rifle Brigade.
Fraser, Bright	Artists' O.T.C., Engineering Section.
Fry, P. G., Major	Wessex Div., R.E. (Mentioned in Despatches.)
Gardner, A. McInnes	2/3 Lowland Brigade, R.F.A.
Gibbs, T. Harry	Artists' Rifles.
Gilmour, T. G.	Army Ordnance Corps.
Guthrie, L. Rome, 2nd Lieut.	Artists' Rifles.
Halls, W. J.	Artists' Rifles.
Harkess, W., 2nd Lieut.	Army Service Corps.
Heath, J. S.	R.N.A.S. (Anti-Aircraft Corps).
Heaven, F. H., Sapper	2/1 Glamorgan Field Co., R.E.
Hebblethwaite, B. R., Lieut.	2nd London Sanitary Co.

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Hill, R. J.	R.N.V.R. (Anti-Aircraft Corps).
Honan, M., Capt.	S. Lancs. Regt. (Wounded and mentioned in Despatches.)
Hooper, H. R., 2nd Lieut.	4th Batt., Suffolk Regt.
Horsnell, A. G., 2nd Lieut.	7th Suffolk Regt. (Wounded.)
Hubback, A. B., Lieut.-Col.	London Regt. (Mentioned in Despatches.)
Hudson, C. A., 2nd Lieut.	9th Batt., S. Wales Borderers.
Hughes, V. H., 2nd Lieut.	R.G.A.
Hunter, J. D.	Artists' Rifles.
Huxley, W. L., 2nd Lieut.	14th Batt. R. Fusiliers.
Imrie, G. B., 2nd Lieut.	Royal Engineers.
Jack, G. W., 2nd Lieut.	Royal Engineers.
Jefferies, F. E.	14th Rifle Brigade.
Johns, P., Major	5th Sussex Battery, R.F.A.
Jones, W. S., 2nd Lieut.	Kent (Fortress) R.E.
Juniper, F.	Kent (Fortress) R.E.
Kay, G. A., 2nd Lieut.	Sherwood Foresters. (Killed.)
Kennard, J. H., 2nd Lieut.	3/3 Kent Field Companies, R.E.
King, F. C., 2nd Lieut.	14th Batt., Royal Irish Rifles.
King, G. C., 2nd Lieut.	10th Batt., Royal Irish Rifles.
Lamb, F. W., Bombardier	3rd Northern Brigade, R.F.A.
Leggett, M. C. M., Lieut.	Baganda Rifles.
Lock, J. M. B., 2nd Lieut.	5th Middlesex Regt.
Lockton, H. W., 2nd Lieut.	North Midland Divisional R.E.
Lofting, E. E., 2nd Lieut.	Kent (Fortress) R.E.
Logan, P. N.	15th Batt., Gloucester Regt.
Lord, G. W., Capt.	Royal Engineers.
Lowbridge, G. C., 2nd Lieut.	Royal Engineers.
Lyon, M., Flight Sub-Lieut.	R.N.A.S.
Mackenzie, J.	Royal Navy.
Mark, J. G.	R.A.M.C.
Marshall, H. J. C., 2nd Lieut.	North Midland Div. R.E.
Martin, W. H.	Royal Engineers.
Matthews, Staff-Major	London Division.
May, P., 2nd Lieut.	Kent (Fortress) R.E.
McDermott, W. K.	4/4 Royal West Kent Regt.
Mitchell, G. A., 2nd Lieut.	Field Co., Highland Div., R.E.
Moore, F. W., 2nd Lieut.	Royal Engineers.
Naylor, J. J. S.	H.A.C.
Oxley, W. B., 2nd Lieut.	3/1 North Midland Div., R.E.
Pace, C. L.	12th Batt., County of London Regt.
Palmer, K.	East Lancs., R.A.M.C. (T.).
Paton, J. S., Lieut.	Army Service Corps.
Peach, C. Stanley, Capt.	Reserve of Officers (T.F.).
Penfold, J. T.	Surveying Section, R.E.
Perrin, A. J.	Artists' Rifles.
Philips, A. M., Capt.	11th Batt., K.O.Y.L.I. (Killed.)
Phipps, Paul, Capt.	3rd Sherwood Foresters.
Pickering, Sapper	4/1 Co., R.E.
Piercy, A. R., 2nd Lieut.	North Midland (Staffs) R.G.A.
Pope, T. C., 2nd Lieut.	Kent (Fortress) R.E.
Quiggin, E., 2nd Lieut.	Royal Engineers.
Quirke, W. D., 2nd Lieut.	1st Labour Batt., R.E.
Rees, F. W., 2nd Lieut.	3/1 Welsh Field Co., R.E.
Richley, N., 2nd Lieut.	22nd Northumberland Fusiliers.
Roberts, W. W.	M.T., A.S.C.
Robinson, G. H.	18th Durham L.I.
Rose, E., Corpl.	1st South African Infantry.
Rosenthal, C., Lieut.-Col.	3rd F.A. Brig. Aust. Div. (Mentioned in Despatches.)
Runtz, E. M., Capt.	5th East Surrey Regt.
Ryan, H. A., 2nd Lieut.	14th Middlesex Regt.
St. Leger, C. D., 2nd Lieut.	13th Hants Regt.
Sands, H. C.	2nd London Sanitary Co., R.A.M.C.
Sanville, G.	Royal Fusiliers.
Scorer, G. O., Lieut.	Royal Engineers.
Shiner, L. A. D.	Artists' Rifles.
Silley, P. G., Sub-Lieut.	R.N.V.R.
Simmons, G. H., 2nd Lieut.	Royal Engineers.
Smith, E. K., 2nd Lieut.	1st East Kent Regt. (Died of Wounds.)
Spooner, F. P., 2nd Lieut.	12th Essex Regt.
Stallard, S., Major	17th London Regt.
Stokoe, R.	O.T.C.
Stone, G. M., 2nd Lieut.	Royal Engineers.
Stonehouse, C.	11th Batt., East Lancs. Regt.
Stuttle, B. W., Sapper	Kent (Fortress) R.E.
Tasker, W. W., Capt.	1st Northumberland R.E.
Taylor, F. P.	Artists' Rifles O.T.C.
Taylor, R. V., 2nd Lieut.	East Riding (Fortress) R.E.
Temple, E. E., Lieut.	3rd Field Co., Canadian Engineers.
Tomkins, S. E.	Artists' Rifles.
Townsend, C. W.	Army Cycle Corps.
Trebilco, A. F.	Australian Imperial Forces.
Tucker, A. H., 2nd Lieut.	2/4 Batt., Royal Sussex Regt.
Turner, F. W.	London Electrical Engineers, R.E. (T.F.).
Wall, R. L., 2nd Lieut.	7th Batt., Dorset Regt.
Waller, T. J.	28th Batt., Northumberland Fusiliers.
Warren, H. G.	Artists' Rifles.
Watson, H.	Royal Engineers.
Watson, H. B.	6th Canadian Field Engineers.
Webb, Philip E.	London University O.T.C.
Welford, A., 2nd Lieut.	Army Service Corps.
Wellings, T. R.	Royal Engineers.
White, J.	Inns of Court O.T.C.
White, W. D., 2nd Lieut.	14th Royal Fusiliers.
Wilkinson, H. A.	Inns of Court O.T.C.
Williams, L. E.	Artists' Rifles O.T.C.
Williams, P. J., L.-Corpl.	Transport Section, 11th Welsh Batt.
Wilshere, R. S.	Artists' Rifles.
Wilson, D. M., 2nd Lieut.	Royal Engineers. (Wounded.)
Wilson, H. A.	Artists' Rifles.
Wingrove, G. C., 2nd Lieut.	R.F.A.
Witten, R. B., L.-Sergt.	Durham (Fortress) R.E.
Wyllie, R. T. M.	London Scottish. (Missing, believed Killed.)

NOTES ON BOOKS.

"Gothic Architecture in France, England and Italy." By Sir Thomas Graham Jackson, Bart., R.A., F.S.A., Hon. D.C.L. Oxford, Hon. LL.D. Cambridge, Hon. Fellow of Wadham College, Oxford, Associé de l'Académie Royale de Belgique. In two volumes. (Cambridge: University Press. 52*s.* 6*d.* net.)

"ALTHOUGH this book," says the author in his preface, "treats of a definite period of Post-Roman architecture, and may be read independently, it is in fact a continuation of the history I published in 1913 of the Byzantine and Romanesque styles." The limitation of the scope of the work to the Gothic architecture in France, England and Italy is explained as due, so far as the Gothic art of the Low Countries and of Germany is concerned, to the present war having prevented the author from visiting those parts to revise his notes taken many years ago, and, as regards the Gothic of Spain, to the author's lack of personal acquaintance with that country. Here we have indicated one of the merits of the book. It is founded on the author's personal knowledge at first hand of the buildings described and illustrated, for the most part, by his own drawings. It is refreshing, in these days of photographs and lantern-slides, to take up an account of architecture illustrated by the author's own drawings, for such work enables the writer to bring out the points of his descriptions and explanations in a way which photographs, even when taken for the express purpose, still less when borrowed from picture-postcards, can never do.

Books on architecture may for the most part be divided into two classes, those for the amateur and the general public and those for the professional student and specialist. Sir Thomas Jackson's work is eminently suited for both. Its technicalities are so lucidly and simply explained that the veriest Philistine cannot fail to grasp them. At the same time they are sufficiently particular to satisfy the professional student, who will also benefit from the insistence by the author of the humane side of architecture. Take, for example, the exposition of the causes of the great wave of activity in the cathedral-building epoch of Northern France, or the elucidation of the position of the mediæval architect.

The explanation of the vaulting problems attacked by mediæval architects and the part played by the vault as a prominent but not superlative element of Gothic architecture is amongst the best efforts of writers on architecture.

We must not omit to point out the evidence of careful and original research as well as learning which runs through the book, and thus adds to our knowledge of

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Gothic architecture in no small degree. This alone would be sufficient justification for the appearance of yet one more literary effort to explain Gothic architecture, but even without this valuable feature we must in justice characterise Sir Thomas Jackson's two volumes as a remarkably pleasurable, as well as informative, introduction to a true understanding of what Gothic architecture really means and is.

"A B C of Heraldry." By Guy Cadogan Rothery. With 13 illustrations in colour and 314 in half tone and line. (London: Stanley Paul & Co. 5s. net.)

HERALDRY in these days may be regarded by some as a purely dilettante pursuit, by others as an interesting but trivial side issue of history and art. To the architect, however, it is one of the "variis eruditionibus" of which Vitruvius speaks, a branch of his art of which it is almost vitally necessary that he should have some knowledge, a comprehension of at least the A B C. Heraldry, even in its original purpose of distinguishing individuals at a distance, still survives in the racing colours of horsemen and yachtsmen, in the football field, college colours, and other sporting adjuncts. But the architect will be tempted to make use of heraldic insignia as a valuable form of decoration, and unless he is acquainted with the elementary language of blazoning may easily commit the most terrible blunders.

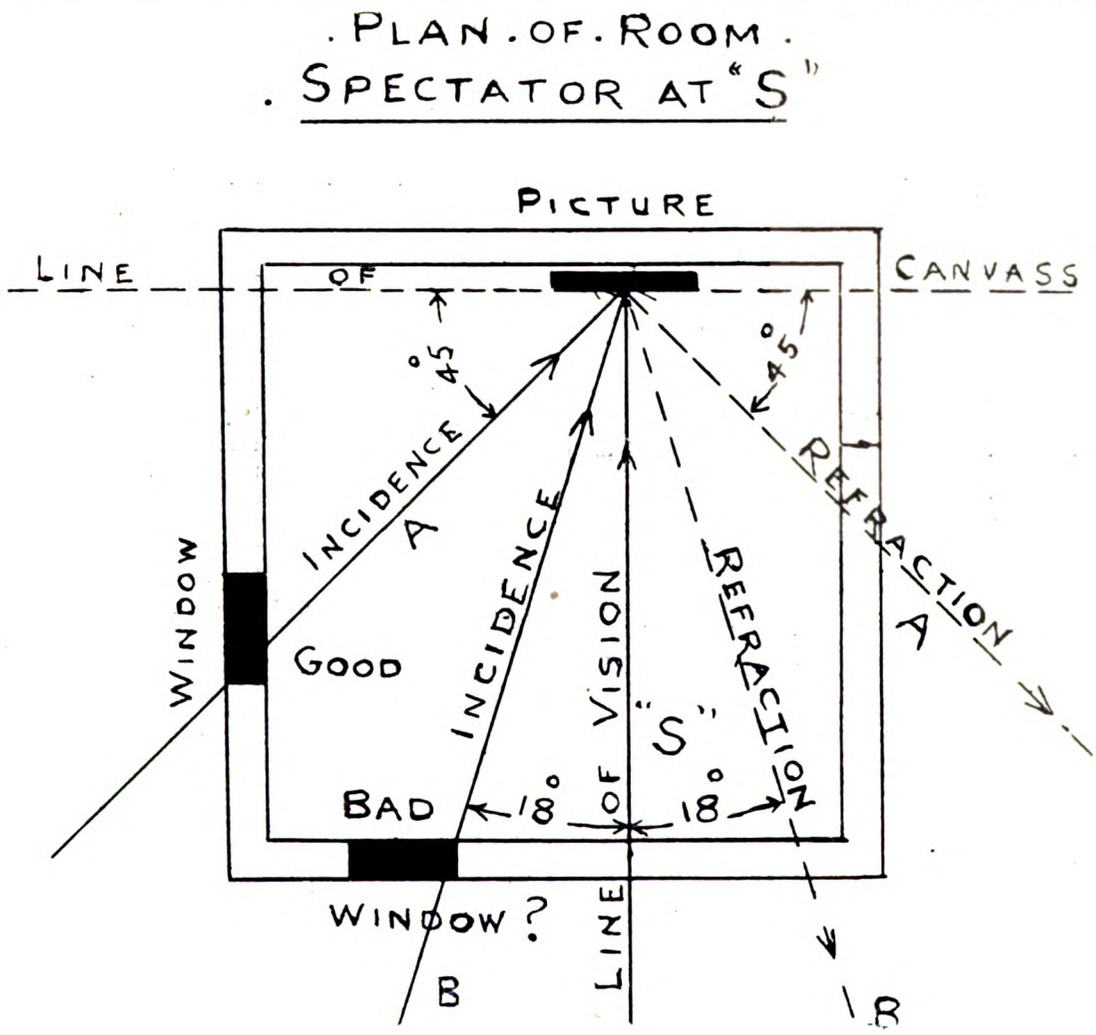
Mr. Rothery's book deals very ably and fully with the A B C of heraldry, with ordinaries and charges of various categories, with marshalling and differencing, with crests, helms and badges, not forgetting the interesting variant of merchants' marks, the Royal arms of England and the arms of the Oversea Dominions, with standards, banners and flags, with the position and function of the College of Heralds.

In short, the book may be well commended as fulfilling thoroughly the purport to which it pretends, a primer of heraldry. The student in his novitiate must, however, be advised that the author is not infallible, and errors are apparent which should afford pleasure in detection—as, for example, there is discrepancy between the verbal and graphic blazoning of the arms of St. Bartholomew's Hospital; the lion on the Jacobean fire-back facing p. 40 should be described as "passant guardant."

The illustrations are not only numerous but illustrative of the excellent decorative effects which artists of the past have allied with heraldic language when the import thereof was a matter of importance.

CASTLE HOWARD: ITS ARCHITECTURE AND WORKS OF ART.

THE architecture of Castle Howard—the Yorkshire home of the Earls of Carlisle for the past two centuries—and the world-famed treasures of art within its walls, formed the subject of an interesting lecture delivered recently before the members of the Yorkshire Philosophical Society at the Tempest-Anderson Hall, York, by Mr. A. B. Burleigh, of the York and East Yorkshire Architectural Society.



CASTLE HOWARD.—DIAGRAM I.

The lecturer said it afforded him pleasure to place before his audience illustrations from photographs which, by permission of the ninth Earl and Rosalind, Countess of Carlisle, he had been privileged to obtain, and to whose kindness and courtesy on many occasions he felt greatly indebted.

The Earl to whom he referred was a devoted patron of art. He was a painter of considerable ability, as may be seen from many of his works which still adorn the walls of Castle Howard in some of the apartments, and in the south corridor.

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The present building, the greater part of which was completed about 1715 from the design of Sir John Vanbrugh, stands upon a commanding site above the valley of the Derwent, along which runs the North-Eastern Railway connecting York and Scarborough.

It is built of stone, approximately to the four quarters of the compass, and dominates a position where once stood the old Castle of Hinderskelfe.

Of this nothing remains, it having been completely destroyed by fire during the lifetime of Charles Howard, the third Earl.

Mr. Burleigh prefaced his main theme with a brief consideration as to the disposition and lighting of paintings, illustrating this portion of his lecture by means of diagrams which we here reproduce.

As an approximate rule, he contended, the source of light should proceed from a window or skylight within the angle of 45 degrees, whether horizontally or vertically, from the plane of the canvas, for although it was true that the angles of incidence and refraction were equal, photography revealed the existence of surface reflection, minute points of light, from varnished oil paintings under any other conditions of lighting.

By reference to Diagram II., a section through a picture gallery, the light proceeding from the skylight behind the spectator at incidence B would cause these undesirable conditions, in spite of the fact that the true line of refraction B did not reach the eye but fell on to the floor below the figure indicated.

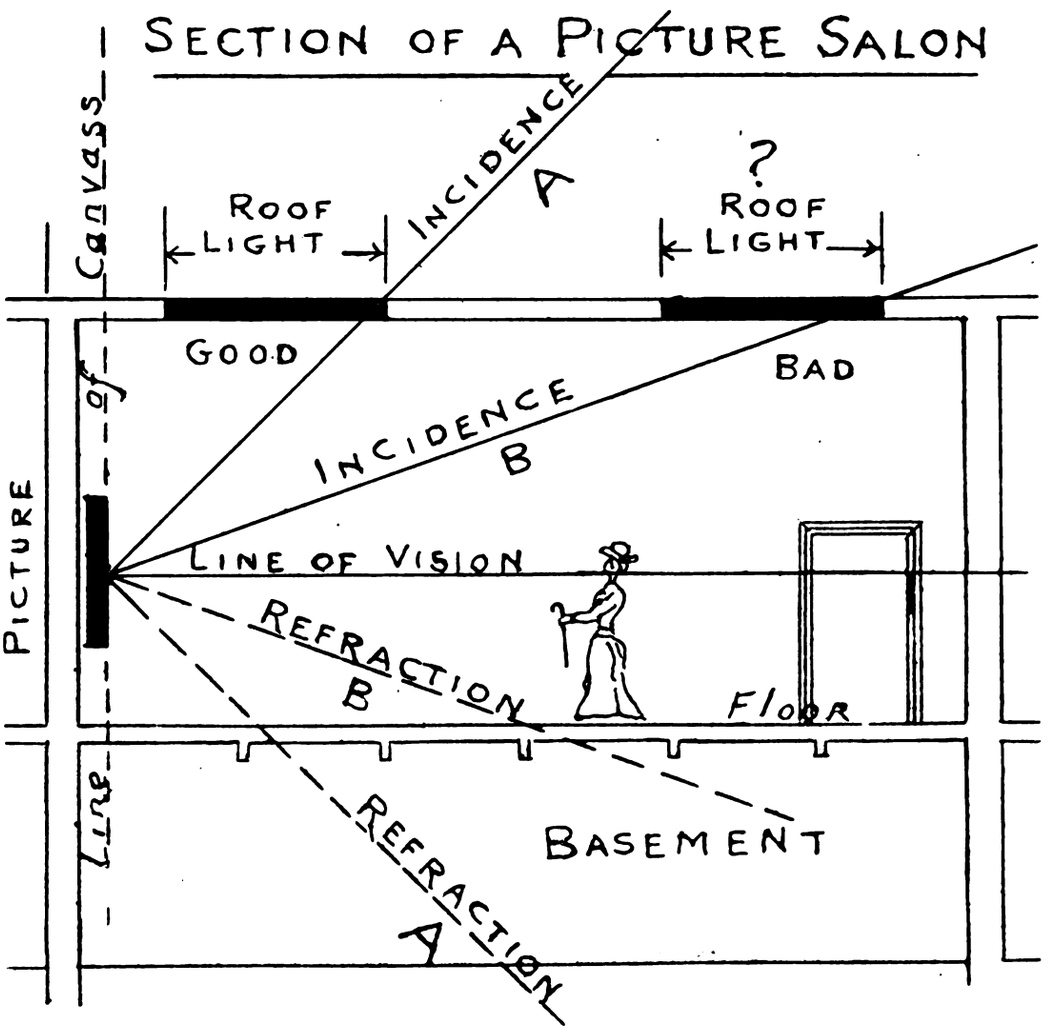
The roof light above the painting with its incidence A would cause no such surface reflection.

In the design of picture galleries generally this would suggest rooms of no very great length, and where roof lighting was not available this should be especially observed so as to increase the number of side walls, on either side of which pictures could be hung.

Proceeding, Mr. Burleigh drew the serious attention of those responsible for the lighting of public art galleries to these principles, which formed a theoretical basis governing the correct distribution of light, whether natural or artificial.

Such conditions were probably carefully considered in the artist's studio, both as to the position and intensity of lighting.

Of the paintings which the lecturer had photographed on the walls of Castle Howard he had generally obtained the best results in a somewhat attenuated light, *i.e.*, one which would register three to five minutes duration on Wynne's actinometer, but he was quite aware of the fact that some paintings required stronger lighting than others.



CASTLE HOWARD.—DIAGRAM II.

He strongly condemned the use of glass in front of oil paintings, regarding it as a pernicious modern innovation. It acted as a mirror for all brightly lighted objects in the room, or the gilded frames of paintings upon the opposite wall, thus forming an indiscriminate picture of its own. The eye, in its endeavour to concentrate the vision upon the canvas behind the glass was met by this confusion of objects.

During the summer of 1912 an exhibition was held in the City Art Galleries, York, of the works of the five Brothers Moore.

Whilst viewing one of Henry Moore's masterpieces, "A Storm in the Mediterranean," a lady dressed in light summer costume having a "picture" hat surmounted by a white ostrich feather stood close beside the lecturer.

Could the artist have contemplated for a moment this

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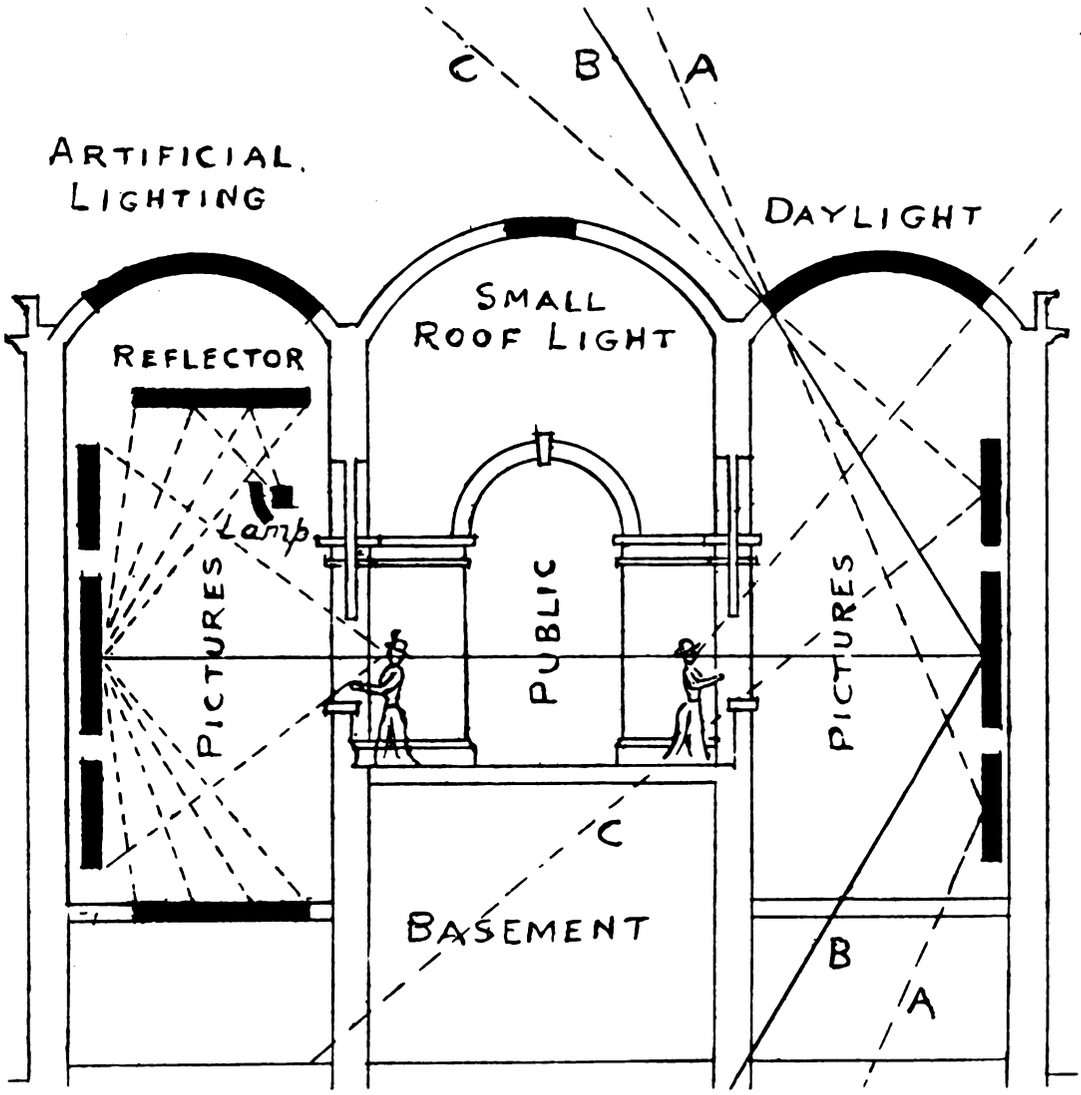
finishing touch to his work reflected on the glass—this "Venus in opposition to the sun" walking on the angry billows—it would have made him weep.

The lesson to be learnt was that spectators should be in a subdued light, and that no strongly illuminated objects should be placed opposite.

The lecturer had been told that glass fronts were necessary for the preservation of oil paintings.

He was not aware that any of those at Castle Howard (except one, by a special arrangement) ever had been, and yet they appeared to have stood the test of time in a most remarkable way for centuries, some for upwards of 300 years, both here and in the Palais Royale, as witness "Les Bateliers" and "La Chasse au Vol," by Annibale Caracci.

Mr. Burleigh thought it might be possible to exhibit



CASTLE HOWARD.—DIAGRAM III.

large and important works under more favourable conditions. If they were worth the expenditure of large sums of public money surely every effort should be made to do this. The idea conveyed on Diagram III., which was a cross section through a public gallery, was worth further consideration and development. Here the central promenade was in a subdued light.

The paintings were hung in side galleries to which the public were not admitted, which, in view of recent events, was desirable.

The section showed suggested methods of lighting, one natural and another artificial, and it would be noticed that in no instance were the lines of refraction A, B, and C thrown back to the eye.

The source of artificial illumination might be from a large number of specially constructed lamps of low intensity, screened entirely from the eye, or a diffusion from movable white reflectors, the pictures themselves to be shielded from all direct rays from the initial source of light.

As before stated, it was Charles, the third Earl of Carlisle, who employed Sir John Vanbrugh to design Castle Howard, an eventful epoch in the life of this extraordinarily brilliant man, which seems to have set the seal to his reputation as an architect in spite of much opposition.

Mr. Robert Oglesby states that of Vanbrugh's early training little was known. His father came from Ghent, in Flanders, and settled at Chester, where he amassed wealth as a sugar baker, afterwards obtaining the post of Comptroller of the Treasury Chamber.

After completing a liberal education in France, and on his return to England, young "Van" entered the Army as an ensign, and was next conspicuous as a dramatic writer, his first comedy, "The Relapse," being produced with marked success at Drury Lane.

There was in a sense a slight overlapping of vocations, inasmuch as his first completed architectural work was a theatre in the Haymarket.

This sudden leap from the drama to architecture was taken as a glorious joke by his brother wits and littérateurs, who forthwith let loose such a flood of sarcasm and raillery upon his architectural efforts as would have crushed with ridicule any ordinary individual. Swift wrote:—

> "Van's genius, without thought or lecture,
> Is hugely turned to architecture."

During the building of Castle Howard, Vanbrugh stayed frequently in the city of York at the George Hotel, Coney Street, and was married rather late in life, at

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CASTLE HOWARD—THE TOURISTS' ENTRANCE AT THE NORTH-WEST CORNER OF CARR'S WING.

St. Lawrence Church, to a daughter of Colonel Yarborough, of Heslington Hall.

During the wars of the Netherlands, which occurred concurrently with the building of Castle Howard, Vanbrugh had the honour of being chosen as architect to design "Blenheim," in Oxfordshire, which was to have been a gift from the nation to John Churchill, the first Duke of Marlborough, but which in reality was paid for out of the privy purse of Queen Anne as long as she lived. Then commenced troublesome times for our dramatic architect. Sarah Jennings, Duchess of Marlborough, thwarted him in his designs, and placed every obstacle in his way. Eventually, after an action at law with the Duchess, whose dislike for him was very pronounced, he was able to recover the money he had advanced on this colossal work.

A plan of Castle Howard copied by Mr. Burleigh from "Vitruvius Britannicus," of 1715, was placed upon the screen. This showed Vanbrugh's complete design of the principal floor, and included the great court.

This feature, however, had never been executed, probably owing to a very considerable fall of the pasture land down to the great north lake.

That Vanbrugh was cognisant of this is clearly proved by reference to his elevation, which is here reproduced, together with that of the south façade and the plan above mentioned.

The central portion, which includes the drawing-

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CASTLE HOWARD.—SOUTH END OF THE LIBRARY IN CARR'S WING.

room and south vestibule, has bedrooms above which overlook the gardens and south lake; from those on the right of "Atlas" are the giant cedar trees, while to the left beyond the Temple of Diana in the distance, may be seen the mausoleum designed by Nicholas Hawksmoor for the fourth Earl, a fine example of classic art which drew from Horace Walpole the remark, "Its sheer magnificence would almost tempt one to be buried alive!"

The greater part of Vanbrugh's plan was built as shown, and included the domestic offices, hunting rooms, the great hall, with its staircases at either side, north and south corridors, &c.

The principal floor above referred to was not Vanbrugh's "base." Another floor exists below this as indicated on the elevation from "Vitruvius."

The broad garden walk running parallel to the façade was formed at a higher level to suit the gradients, intersecting at the lower cills, as may be seen by reference to the view taken from under the cedars. Vanbrugh had no very large apartment such as Carr planned when he designed the western wing.

Here the principal room, the library, better known as the long gallery, is 160 feet by 24 feet, divided at the centre by an octagon 37 feet across.

This part of the building is cellared, and as an

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THE GREAT HALL, CASTLE HOWARD, SHOWING DECORATIONS BY ANTONIO PELLEGRINI.

example of the excellence of the work throughout the lecturer stated that the walls were finished with plain ashlar quite smooth to the touch.

The massive oak doors dividing the rooms in Vanbrugh's façade did not remind him of a certain suburban villa, where, owing to bad seasoning of the wood, the domestic cat instead of making the usual plaintive request for admission to the dining-room walked through a crack in the lower panel of the door.

The lecturer did not believe this any more than the story that owing to the great accuracy of setting out at Castle Howard the visitor by placing his eye to the keyhole of the dining-room door could see clearly through six other keyholes right down to Carr's wing.

The uses to which the apartments along the south front were from time to time allocated have been changed, but not very many structural alterations appear to have taken place. In the room immediately adjoining the south vestibule is a fine collection of Venetian paintings by Antonio Canaletto, and beyond this to the east lies the present dining-room. In this case three of Vanbrugh's original apartments have been converted into one, with two doors leading off the south corridor and six windows facing the gardens.

Here are two life-size portraits on panel by Cornelius Janssen, one of Lord William Howard and another of his wife, Lady Elizabeth Dacre, taken rather late in life, probably about the year 1620.

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CASTLE HOWARD.—THE SOUTH FRONT.

Sir Walter Scott in "The Lay of the Last Minstrel" has made Lord William famous under the sobriquet of "Belted Will":

> Costly his garb, his Flemish ruff
> Fell o'er his doublet shaped. of buff,
> With satin slashed and lined;
> Tawney his boot, and gold his spur,
> His cloak was all of Poland fur,
> His hose with silver twined.
> His Bilboa blade, by Marchmen felt,
> Hung in a broad and studded belt—
> Hence, in rude phrase, the Borderers still
> Called noble Howard "Belted Will."

Lord William was a son of Thomas, the ill-fated Duke of Norfolk, who was beheaded during the reign of Queen Elizabeth. By his marriage with Lady Dacre, which occurred at the age of fifteen, he acquired besides Hinderskelfe the old Border keep of Nowarth in Cumberland—now known as Naworth Castle.

The title "Earl of Carlisle" was conferred upon a great-grandson of Belted Will by Charles II. in 1661, this, the first Earl, having been a loyal partisan of the King at the time of his restoration.

The great hall at Castle Howard, of which a view is shown, was decorated about the year 1712 by one Antonio Pellegrini, of Padua.

In a panel over the landing of the east staircase is represented "Apollo and the Muses," and above the four massive arches supporting the dome, one in each angle upon the curved soffits, may be seen his bold design illustrating the four elements, Earth, Fire, Air, and Water.

The stables, which in Vanbrugh's design are adjacent to the main block, were built some 150 yards distant.

Carr widened the west wing, and built his chapel across it at the north end, with its altar east. Beneath this chapel is an entrance level with Vanbrugh's basement floor, leading to the lower hall, the staircase from which ascends to the principal floor. Here may be seen portraits of many of the Howards, the Duke of Wellington, the Right Hon. Charles James Fox, &c., sculptured in white marble, also an exquisitely modelled bust of "A Lady unknown," by R. Rinaldi. The two above mentioned are the work of Joseph Nollekens.

Mr. Burleigh said that the privilege so generously granted for years by Lord and Lady Carlisle to the public, of seeing the interior of their beauitful Yorkshire mansion, could not fail to be very greatly appreciated by all lovers of the arts.

He deeply regretted that through the conduct of militant suffragettes in recent years it had been deemed advisable to discontinue this.

In conclusion he referred to the present Earl, who had attained his majority recently, being amongst those so loyally defending Great Britain and Ireland upon the high seas, and wished him safe return to the home of his ancestors in Cumberland.

SOME NOTES ON REINFORCED CONCRETE.*

(Concluded from last week.)

HIS MAJESTY'S New Stationery Office occupies a site of about 2½ acres. The building has a front in Waterloo Road faced with Portland stone, and other fronts in Stamford Street, Cornwall Road, and Doon Street, rendered with Portland cement. While the building operations were in the initial stages visitors were struck by the unusual spectacle of a number of yawning pits (about 10 ft. square and 15 ft. deep), from each of which

* Abstract from a Paper read at the ordinary general meeting of the Surveyors' Institution, on January 10.

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arose a shuttered column of about 2 ft. square. A still more striking feature was presented by the building plant, an interesting description of which, together with some photographs, reproduced drawings, and general information in respect to the building itself, may be found in the "Supplement to the Contract Journal," dated November 13, 1912. Three "Ransome" concrete mixers, worked by electricity, were in evidence, and three travelling cranes, also worked by electricity, ran aloft on rails supported by an imposing array of lattice steel girders and uprights. Quoting from the "Supplement," to which I have just referred:—

"The gantries are modelled from those in shipyards, and they are the result of a careful study of the problem how best to erect this very special ferro-concrete building in the most expeditious manner and with due economy in plant and in labour."

These steel gantries enabled the contractors to place the building materials in position at any point from ground floor to roof at, practically, a uniform cost. So far as I can judge, the uniformity was only broken to any appreciable extent in connection with the work to the upper floors; which entailed, of course, the loss to the contractors of the time occupied by the workmen in getting from the entrance gate to their places on the job.

It may be remarked here that, theoretically, there should be no "knocking off" loss suffered by the contractors in regard to the time occupied in getting from working positions to the exit; but what occurs, in practice, depends on the contractor's foremen, the workmen and special circumstances.

Some idea of the magnitude of the New Stationery Office may be gathered from the fact that 10,500 cubic yards of ferro-concrete and about 1,100 tons of steel were needed for its construction. These materials were put together on the Hennebique System throughout.

As might be expected in a building of this description, there was a large amount of repetition. Many beams and columns were of the same size, the result being that the contractors were able to use their formwork to great advantage. I believe that only about one-third of the formwork provided in the bill of quantities was actually required on the job.

The contractors also had the advantage of being able to make up on the ground-floor level practically the whole of the reinforcements for the beams. Hoisting into position with the aid of the travelling cranes was a simple matter.

A "Kennedy" bar-bending machine, and another of Chatelier's design, did what was required in shaping the rods.

This building has been converted for the time being into a hospital—known as the "King George Hospital." Some interesting details of the conversion may be found in the review entitled "Ferro-Concerete," of November last. With this successful adaptation before us there would appear to be no further ground for the objections which have been raised to erecting buildings in reinforced concrete owing to the difficulties and costs that might arise in making alterations in the event of changes taking place in ownership and business. A few years ago some hesitation existed with reference to cutting into reinforced concrete walls, apart from the question of cost, but we are now getting bolder.

No doubt it is true that difficulties arise in obtaining satisfactory tenders for the demolition of reinforced concrete structures: a case is recorded in which the cost of demolition amounted to double the cost of erection.

There is no reason, however, why blasting operations should not be put into force in cases of extensive alterations, or where pulling down is required, provided that an experienced hand does the work and that proper shields are used. A large amount of blasting has been done for the Office of Works in connection with the removal of old foundations, and no accident has occurred. In the case of the old cement concrete foundations, 9 feet or 10 feet deep, which had to be removed on the other side of Great George Street, gelignite cartridges were employed, and the holes for receiving the charges were formed by an electric drill. The operations were quite successful.

I may now submit some notes in connection with the New Science Museum, South Kensington. This important building, which is being erected on a site of about two acres, is of reinforced concrete with a Portland stone front to Exhibition Road, and other fronts faced with brickwork in conjunction with stone strings and cornices. As regards the interior, the whole of the exposed face of the concrete is to be rendered in Portland cement (one of cement to three of sand) finished with $\frac{1}{8}$ inch Keene's cement.

The building is designed on substantial lines; so much so that its appearance when complete will hardly suggest the presence of ferro-concrete.

The most interesting features are the two arched roofs and their continuous lantern lights. These roofs are of 34-foot and 42-foot span respectively. Some difficulties are presented by the formwork to the arched ribs, especially as the sides have to be panelled out. The reinforcements here also call for special treatment, but they are assembled before being hoisted into position in the rib boxes.

All the steel rods are being obtained from Earl Dudley's Steel Works, Brierley Hill. Some of the rods for the long beams have been supplied in lengths of 73 feet. No extra charge is made for rolling, but there is one in respect of carriage. These rods are 1 inch in diameter, and, for greater ease in handling and bending, are taking the place of $1\frac{3}{8}$-inch roods, an additional number of rods being put in the beams.

The Coignet System is adopted in this contract, the rods and links being calculated and specified to the one-sixteenth of an inch in diameter—quite fine enough for all practical purposes. I know, however, of a building for which some reinforcements were specified to the one-sixty-fourth of an inch in diameter. The concatenated mass of rods in this museum makes one wonder how the aggregate (graded from $\frac{3}{4}$-inch mesh downwards) is worked in, but some ingenious appliances are being used, known as "rammers" and "slicers," with which the punning and surrounding is done very satisfactorily. In order that the wire for binding purposes should not be wasted or misapplied, it is cut to the required lengths in combined strands, leaving no ends to be dropped into the formwork or concrete.

No overhead machinery for placing materials in position is to be seen. Ordinary scaffolding is employed, but it is put together on the "Scaffixer" system. The lay-out of the plant has been well arranged, the cement, stores, ballast, and sand being close to the mixer. The latter—one of Ransome's—is worked by electricity, and mixes about one-third of a yard cube of concrete at one time. As at the New Stationery Office, the concrete is made in the proportions of 1 + 2 + 4. The process adopted is to fill the feeding hopper to the mixer with a gauged measure of ballast, another of sand, and a sack of Portland cement (about 204lb.). After tilting these materials into the mixer, water is added immediately from an adjustable gauge tank, when the whole is thoroughly churned—usually for about a minute and a half. The resulting mixture is then discharged into a tip-wagon and conveyed on a light railway through the building, or to the sides of the building, where electricity driven hoists raise it to the required levels. Boarded aprons protect the structure where the hoists operate. The quantity of water supplied to the mixer depends to some extent on the weather and the state of the ballast and sand. In wet weather, when the latter materials are damp, the gauge is adjusted accordingly, but only an experienced man is allowed to decide as to the quantity of water proper to the varying conditions.

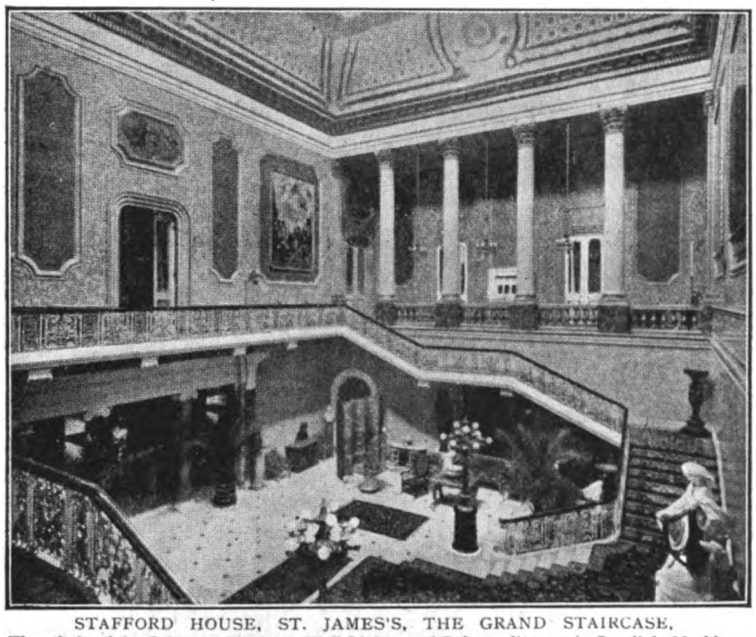
The formwork in this building is, in some parts, very intricate, and, except in regard to the floor-slabs, there is little that can be used more than once. It is put

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together with wire nails (3 in. and 4 in.), which may be clawed out readily as they are not driven right home.

It may seem fitting to state here, after my early reference to railways, that the new museum will probably house George Stevenson's famous engine "The Rocket," and other machinery now to be seen in the adjacent building.

Leaving the New Science Museum, I now turn to a few general notes which are somewhat disjointed.

During the erection of a reinforced concrete building care should be taken to prevent the concrete from adhering to any party-wall or adjoining property, otherwise damage might be caused to the latter in the event of a severe frost, owing to the contraction of the ferro-concrete. Sheets of felt placed to separate the new concrete from the old structure have been found most effectual.

Pronouncements are invited on the following points about which there is diversity of opinion among experts:—

While some authorities allow the formwork to be covered with a wash of lime before the concrete is deposited, in order to ensure good surfaces when the centering is struck, others regard it as unnecessary, and are satisfied if the boards are kept well wetted. And while the formwork is treated with "concrete oil" in some cases, it is condemned in others. It is certain, however, that the formwork should not be oiled if the concrete is to be plastered.

Differences of opinion also exist as to the best means of making concrete waterproof. Experts agree, however, that the concrete should be moderately rich and that the aggregate and sand should be so well graded as to fill, if possible, all pore spaces. The concrete should be mixed and laid with the greatest care, and should be allowed to set and harden before its permeability is tested. Some authorities state that the mixture should be "fairly wet," and that "on no account should a dry mixture be made if intended to be watertight." On the other hand, one authority states that the mixture should be "fairly dry" and "well rammed in thin layers."

Coming to the concrete roof or flat, with its covering of asphalt, the question arises whether the concrete should be finished smooth with a rule, or receive, while it is green, a floating of cement. Either course provides the necessary even surface for the asphalt, which should be applied in two coats, the first being more bituminous than the second. When this method is followed very little trouble arises from the expansion and contraction, although, in the case of a very wide flat, unbroken by skylights, it would perhaps be advisable to form expansion rolls in the asphalt. One well known firm of asphalters prefers to lay the asphalt (two thicknesses of ⅜ inch) on stout canvas nailed to a cement floated surface with zinc nails. It appears that asphalt will adhere very firmly to concrete walls or flats if the surface of the concrete is first painted with coal tar. The latter should be "heated in small quantities, brought just to the boiling point, and then applied immediately."

With regard to the various "systems" of reinforcing concrete, can it be declared whether there is cause or just impediment why the rods in beams should not be slightly larger in section and fewer in number? It certainly seems feasible that they should in no case be nearer to each other than two inches in order that it may be tolerably easy for the concrete—not thinned out, but containing its proper proportion of aggregate—to "surround" the reinforcements, and thus have a chance of doing its full work.

According to the title of a technical journal we are now living in the "Concrete-Cement Age." This is hardly the case, at any rate so far as this country is concerned, but it is very probable that reinforced concrete will be used increasingly for building purposes in the future: its many advantages—economical and hygienic—being already widely known and appreciated. It is possible that this material will develop the "Rectangular" style of architecture, in which the perpendicular lines of piers or counterforts are met by the horizontal lines of sill and string courses—but it seems to be specially adaptable for treatment in Eastern styles, with minarets, cupolas and domes, and with heavy cornices and projecting balconies to give shadows and artistic effect. Architects will have occasion to bear in mind the stereotyped phrases "simple massiveness" and "noble proportions" when dealing with this material. It is to be hoped that they will not be afraid of plain surfaces, as we have no wish to see the external faces of concrete buildings "embellished" with series of bull's-eyes, or set out in sunk or raised panels. Cottages should be designed to harmonise with their surroundings, and might be tinted with pleasing effect, or partly enclosed by trellis-work for supporting the climbing rose or geranium. Factories present a more difficult problem, and they will always look aggressively ugly if erected in rural districts, where any structure that is not time-worn appears incongruous. There is no reason, however, why they should be of the sky-scraper pattern —the huge perforated box placed on end—and neither is it necessary that the sky-line should be broken by a horrible display of saw-toothed roofs. A little ingenuity, stimulated by some consideration for the owners of adjoining property and the feelings of the passing stranger, should render it possible to build on utilitarian lines without creating monstrosities at sight of which a lover of rural scenes is brought to a standstill with an indescribable sense of pain.

Let us see to it that our reinforced concrete buildings are as beautiful as art can devise and funds permit. Mistakes have been made in the past: they have taught us much, but there is still much to learn. We must, therefore, press on to a fuller knowledge of this wonderful building material—of the science that governs its construction and the art with which it should be applied. Difficulties will confront us, but they will not be so formidable that they cannot be overcome.

"The distant mountains that uprear
Their solid bastions to the skies,
Are crossed by pathways that appear
As we to higher levels rise."

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WERE a plébiscite to be taken upon the relative strength of appeal to the public sympathies effected by the stories specially devoted to the season of Yuletide, the preponderating vote would be cast for "The Christmas Carol," that simple, yet powerful, dream-sermon of Charles Dickens. It is one of those stories whose fame is coeval with their birth, remaining undimmed, undiminished, and indestructible. There are others, it is true, but their number is meagre.

In Mr. Arthur Rackham the story has found its apt and sympathetic illustrator. Scrooge, Marley, Bob Cratchitt, old Joe and his clients—none of these are picturesque figures in the story—there is no heroine, and it is difficult to regard Cratchitt as a hero. But even as Dickens has individually projected himself into each of his stage-puppets, so has the artist acted in his delineation of character. For the collection of illustrations as a whole we have nothing but the highest praise, but we regard the phantasms as being insufficiently phantasmal in appearance. The harmony of tones and tints in the drawings is complete, and the volume makes a most handsome gift for the season. Mr. Rackham's illustrations for the "Queen's Gift-book," and other publications, are all (or mostly) worthy to rank for technical quality with those accompanying the Carol, but with the latter there is a superadded daintiness and fancifulness.

Messrs. Ernest Brown & Phillips are exhibiting also a series of paintings and etchings by members of the Artists' Rifles, that admirable Officers' Training Corps established somewhere in France. But the war

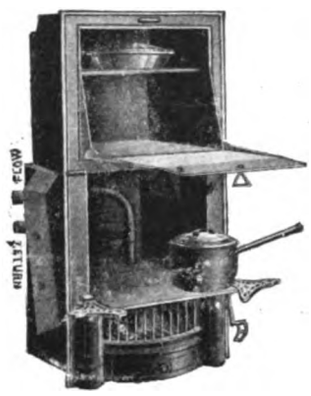
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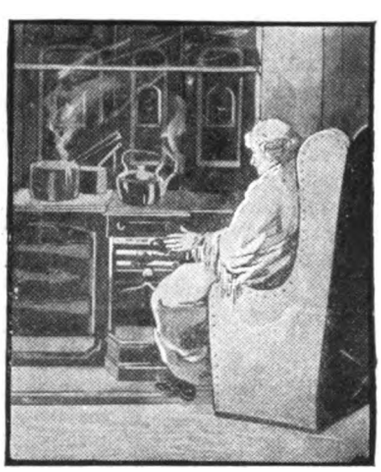
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responsibilities of the Corps deserve greater credit than the bulk of these sketches merit.

Out of some six-score exhibits there are perhaps a score which we can regard as worthy of note. Mr. Lee Hankey's "The Knitting Lesson" (2), and "France in 1914-15" (74 and 78), Cadet C. F. Wallis's "Sunlight in the Wood" (27), Lance-Corporal W. P. Robins' "Interior of a Barn" (31), and "Mannacott, N. Devon" (96), Captain C. J. Blomfield's architectural designs (39 and 40), Lance-Corporal J. Thorpe's studies (41 and 42)—these, and some few more, attracted our attention, and some of these we will here refer to. Captain A. H. Hall shows a virile pencil sketch of St. John's Chapel in the Tower of London (45), and Private Eric Sharpe (49) has a good, clean-cut ink-drawing of Ypres before the war. Corporal G. Ackermann has a nice touch of his own, and knows how to import breadth and mystery into his work. Again, 2nd-Lieutenant A. E. Cooper has a well-modelled portrait in his canvas depicting Colonel Shirley, the colour, too, being good. Colonel W. C. Horsley's "The Disciple" (110) is notable work well composed, but would bear some modulation. Corporal W. H. Byles in "The Sheep-wash" (118) is quite pictorial, and a good piece of composition, satisfactory colour, and in fact is one of the best, where not too many are good. And it is with this work that we prefer to conclude our notice, without specific reference to such as offended our gaze or met with an indifferent reception from us.

THE BUILDER'S POINT OF VIEW.*

By JAMES BROWN.

THE subject, like the title, is a very comprehensive one, and could be held to embrace almost anything. I propose, however, to deal with a few points which in my opinion are of importance as affecting the relations between the building owner, the architect, and the builder, and for this purpose I have arranged the subject under four heads as follows:

1. The present system of building under contract and the relative positions of the building owner and builder.
2. Estimating and the apportionment of some of the liabilities incurred.
3. The Royal Institute of British Architects' form of contract, bills of quantities, and sundry clauses included therein.
4. Specifications and more particularly the specification of timber.

I would like to say that although I am here in my private capacity and not as representing any association or federation of builders, I feel that my views and the opinions I shall express would be endorsed by the majority of responsible builders. Necessarily my remarks will only refer to business in normal times.

From the building owner's point of view the present system of carrying out work under contract at an amount based on a competitive estimate is perhaps as near perfection as any reasonable person can (or ought to) expect. Under it the building owner knows beforehand exactly what the work will cost, and even if there are deviations he knows the cost of such will be based upon the schedule of prices deposited with the architect and which is a part and parcel of the contract.

From a builder's point of view, however, the present system, though perhaps sound in its general principles, is capable of improvement in some of its details, and the time would appear to be ripe for overhauling and revising. Under the present system there is a very material difference between the positions occupied by the building-owner and the builder in that the data supplied to the building owner is complete and definite in every way, so that he knows beforehand exactly what he has to meet; whereas the data supplied to the builder is often incomplete and has, therefore, to be supplemented by more or less inaccurate estimates of the cost to the builder of various parts of the work he binds himself to undertake when he submits his tender, though the amount of such costs is only capable of being ascertained when the work is completed.

Estimating is perhaps the most difficult and important duty a builder has to perform, and although he may duly fulfil his obligation to his employer, he may easily fail in his duty to himself. On this important point it must nevertheless be remembered that he may as equally fail in this connection by over-estimating as by under-estimating, and I can assure you, gentlemen, that to correctly estimate beforehand the cost of a job and to compile a tender which will in competition secure a contract on a remunerative basis is an operation which requires the utmost care, skill, and judgment.

When a builder accepts an invitation to tender for a job his first business is to obtain all the information he possibly can which might affect directly or indirectly the nature of his estimate, and upon the extent and reliability of this information will largely depend the accuracy of such estimate.

Through the architect he will be provided with information in the shape of conditions of contract, drawings, specifications, and bills of quantities. From answers to the various inquiries he has sent out he will obtain cost of materials, transport, &c., particulars as to the regulations and fees of the various local associations, and the local working rules and rates of wages of the operatives in the various branch trades; while from visits to the site he will learn exactly its position, nature, and means of access.

So far so good, but this information alone will not enable him to complete his tender in all respects. To do this he must gauge with reasonable accuracy the following contingencies:—

Firstly, the probability of variations in the price of materials.

Secondly, weather risks.

Thirdly, the capabilities of the local operatives and tradesmen.

Fourthly, the effect which local customs and habits may have on prices, and many other points that may present themselves.

Unfortunately the information available to a builder when trying to form a just estimate of these four and similar items is very limited and uncertain; but, still, all the risks connected with forming a judgment on such matters must be solely borne by himself and rightly so. Even when all this is considered there still remain other and more indefinite liabilities such as:—

Firstly, *Claims for Damage to Roads.*—These depend to a great extent on the construction of the roads, which unfortunately can only be ascertained when put to the test; they also depend on the views held by the various local Councils and their road surveyor. On this point, gentlemen, we unfortunate builders are often severely bluffed.

Secondly, *Increases in Operatives' Wages.*—These are affected by the influence which the agitators in the various trades unions can at any particular time bring to bear on their members and also the position in which the master builder may be placed in regard to the supply of labour.

Thirdly.—In the case of a considerable amount of excavation or draining, quantities frequently stipulate the builder must provide for everything necessary, although he has no opportunity, except at considerable expense, of ascertaining what he is likely to encounter.

Fourthly, *War Risks.*—We have got these. It is impossible to estimate against these and similar risks with any degree of accuracy and fairness to both parties, and at present it is simply a gamble with the odds against the builder. In my opinion these are risks which the building owner should undertake, as, when all is said and done, he is the responsible man and the man who hopes to reap the profit.

* Paper read before the Manchester Society of Architects.

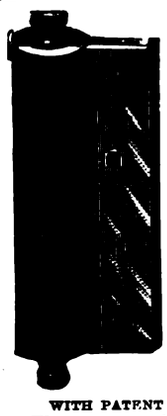
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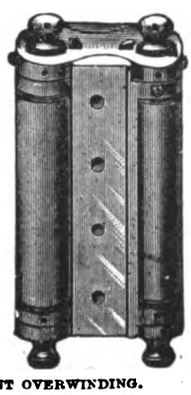
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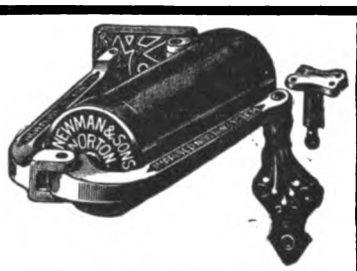




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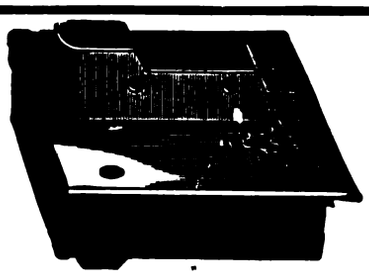
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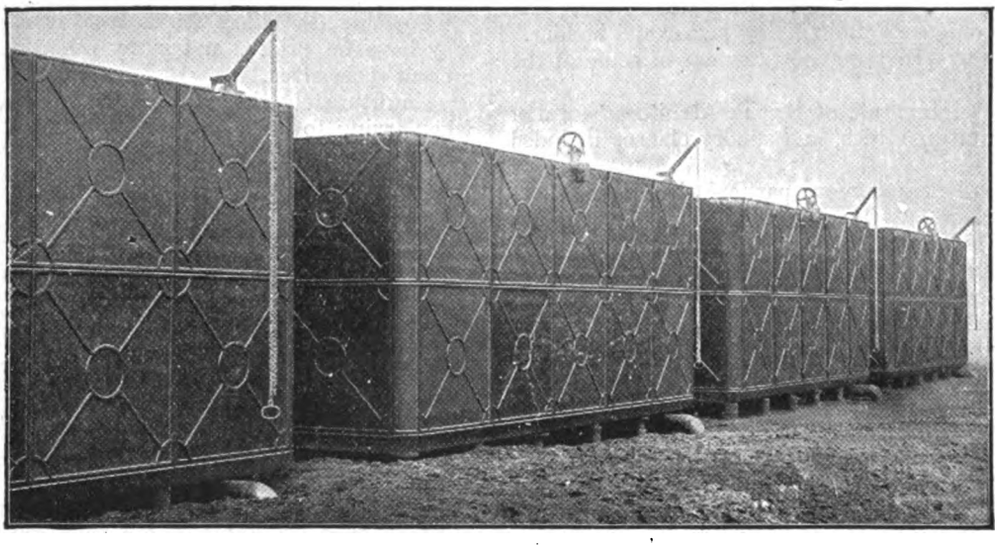
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So far as the R.I.B.A. form of contract is concerned, it may perhaps not be perfect and up to date in every respect, and I believe steps are now being taken to ensure its revision and amendment; but so far as I know it is at the present time the only form of contract officially recognised by the R.I.B.A. and the Institute of Master Builders, and until its revision and amendment have been mutually agreed upon and officially confirmed by these bodies it is the only form of contract any builder should be asked to sign.

Without wishing to interfere in any way with those associations who may be working for the revision and amendment of the form of contract and the present system, I will, with your permission, point out a few defects and submit a few ideas for consideration.

At the present time the liabilities which a builder is required to undertake in respect of workmen's compensation, common law, &c., national health and unemployment insurance, fire insurance, &c., &c., are usually indicated in the preliminary and general conditions of bills of quantities. It would be an advantage to have these items shown in detail and at the end of the bills of quantities. Personally, I should like to see them included in the summary as definite items, each to be priced out separately.

Where it is intended to appoint a clerk of works, the name of the gentleman appointed to the post should be announced before the tenders are made up, because from the nature of the case you will readily understand that without benefiting his client's work in any way he may easily put the builder to a large amount of very unnecessary expense. And although I should be the last to depreciate the work and value of these gentlemen, I, as a practical man, can tell you that, in spite of the immense value and absolute necessity of a clerk of works on every important job, these gentlemen are not always well chosen. I am nevertheless prepared to say that a really competent and conscientious clerk of works is not only of value to the architect and his client, but also to the capable builder who is working under his supervision.

It is desirable the setting-out should be officially checked before any work has been executed, and if the architect can be represented at setting-out so much the better, as his presence there would obviate many irritating and costly disputes.

In the case of prime cost sums or provisional amounts included in quantities, it is desirable the present scramble for discounts should be abolished and a proper understanding arrived at. I should like to suggest a fixed (and reasonable) discount or percentage to which a builder should be entitled and for which he must carry out certain specified duties, such as receiving, unpacking and storing the goods, &c., &c. A builder should not be required as at present to provide for payment of carriage and cartage, &c., where he has not the slightest idea what the goods will consist of nor where they will come from. In fact the provisional amount should include free delivery of the goods at the job.

Another point I should like to make, gentlemen, is that the nomination and direct employment of specialists, &c., by the building owner is a rapidly extending practice which calls for careful consideration with a view to regulating and amending the conditions governing the same. It should be possible to secure a workable co-ordination between the work of the builder and the specialist. At the present time the interests of the two are often diametrically opposed.

(To be continued.)

AT the last meeting of Helensburgh Town Council it was reported that Mr. R. C. Brown, deputy burgh surveyor, had been granted a commission in the Royal Engineers, and that Mr. R. C. Ross had been appointed deputy burgh surveyor, and Mr. Archibald Peddie deputy sanitary inspector, during the absence on military service of Mr. Stirling, burgh surveyor, and Mr. Brown.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Dearth of Apprentices.

SIR,—May I point out what has been done by the Institute of Builders, the body officially representing the building trade of the kingdom?

Some four or five years ago the Institute discussed and formulated a scheme of apprenticeship which meets the points put by your correspondents, and has since been doing its utmost to get the scheme adopted for London by the education authorities, but without success.

The scheme includes provisions which may be shortly stated.

Early in 1912 the Institute submitted to the London Education Authority a constructive scheme of apprenticeship that would enable suitable boys to learn a trade under proper conditions directly they leave the elementary school, on the lines following:—

(*a*) That the school age should be raised for such apprentices by two or even three years, so as to strengthen supervision and maintain, for part at least of the apprenticeship period, some connection between school and workshop.

(*b*) The indentures recommended by the I.O.B. were for a period of five years in workshops and on jobs, so that a boy could learn his trade under actual working conditions.

(*c*) That time on two afternoons in each week at full pay should be given to the study of the theoretical side of the chosen trade during the first two or three years of the apprenticeship term, so that theory and practice should advance together.

(*d*) Where a premium is required with an apprentice the Institute scheme would apply to the payment of such premium a part of the money at present spent by the education authority in scholarships and similar rewards, sums now used mainly in subsidising non-industrial branches of higher education or in maintenance grants.

(*e*) The connection between school and workshop, referred to in Clause A, could be maintained by a small Voluntary Advisory Committee of managers and employers for each district or school division.

(*f*) The Institute scheme also included a schedule of premiums and rates of wages; these rates of pay are a very considerable advance on the wages until now being paid generally in the building or any other trade.

The weekly wages in this schedule starts at 8*s.* 4*d.* per week of fifty hours, and in the fifth year rises to 27*s.* 1*d.* per week (or 6½*d.* per hour), and while they do not and cannot compare with boy wages at present obtaining, owing to war conditions, the parental sacrifice of present advantage for the ultimate good of the boy is surely not a heavy one.

(*g*) Where no premium is paid the Institute's schedule of wages is rather less, so as to provide for payment of premium out of wages.

(*h*) A further part of the scheme is the provision of a bonus of £25 to the apprentice on completion of indentures for the purchase of tools, &c.

These are the main points of the scheme which was first put before all the Borough Councils of London and approved by twelve or thirteen of them, only one Council having returned a definite negative and the rest making "no order."

The scheme has been carefully considered by educational experts and is considered to contain the nucleus of a workable permissive scheme which would gather in the boys between fourteen and fifteen years of age and take them direct from school to a trade and thus prevent the wastage of good material drifting into "dead-end" jobs, having no ultimate benefit when the boy becomes a man, with a man's opportunities and responsibilities.

The scheme has been before the Higher Education Committee of the L.C.C., and has been explained in conference with the Committee, but, while sympathetic, the Committee held that they had no statutory power to adopt it.

The Institute has, therefore, this year decided to request the co-operation of the National Federation of Building Trades Employers of Great Britain and Ireland in arousing interest in support of the scheme by the building trade throughout the country, with a view to parliamentary action and the provision of the necessary permissive powers in the

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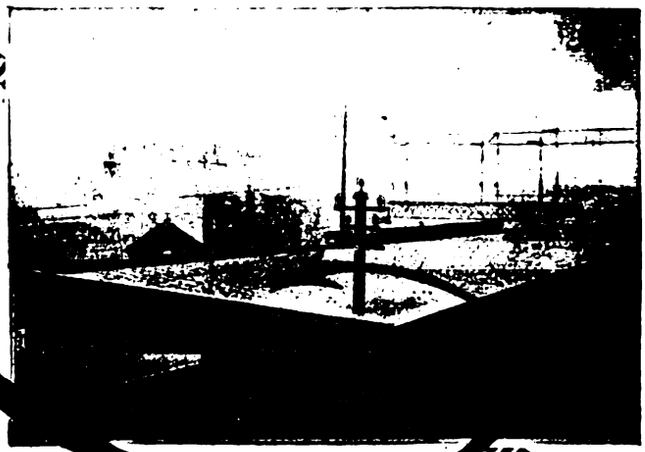
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next Education Bill that must come before Parliament and the country when the war is happily ended.

I apologise for the length of this letter, but the great importance of the matter is my excuse.—I am, Sir, yours, &c., THOMAS COSTIGAN, *Secretary.*

Koh-i-Noor House, Kingsway, London, W.C.:
January 14, 1916.

Increment Values Duty and the Lumsden Case.

SIR,—Although the Land Union is anxious to avoid anything in the nature of political controversy at the present time, it nevertheless considers it a duty to draw attention to the following facts.

Mr. Lloyd George recognised the unfairness of the claim for Increment Value Duty in the above case, and when the Revenue Bill was in committee in the House of Commons on August 1, 1913, he stated that Clause 2 in that Bill was inserted "in order to protect people like Mr. Lumsden." Unfortunately the Bill did not reach the Statute Book, and the same fate befell the Bill of the following year, into which a similar clause was introduced. Nevertheless, the Prime Minister and the Secretary of the Treasury, on July 23, 1914, undertook, on behalf of the Government, to introduce a one-clause Bill to annul the effect of the Lumsden judgment and to bring the assessment to Increment Value Duty into harmony with the original proposals put forward when the Budget of 1909 was introduced into the House of Commons—viz., that there must be a rise in the value of the bare site before Increment Value Duty is demandable.

War having broken out, the Land Union makes no complaint that the Government has been unable to introduce this Bill, but it does complain that, after the injustice suffered by Mr. Lumsden was fully recognised by the Government, the Commissioners of Inland Revenue continue to demand, under threat of legal proceedings, Increment Value Duty under the Lumsden judgment when it is agreed that there has been no rise in the value of the bare site, and have actually issued writs to enforce their claims.

In Mr. Lumsden's case they write that unless £22, the duty demanded, and costs amounting to £249 9*s.* 4*d.* are paid, they will take legal proceedings without further notice or delay.

The Land Union deplores this action as likely to provoke ill-feeling at the present time, and urges that either the promised Bill should be passed without delay, or in the event of that being impossible, the Commissioners of Inland Revenue should be instructed not to press their claims in these cases until Parliament shall have had time to deal with the matter.—Yours, &c., DESBOROUGH,
Chairman of the Council.

St. Stephen's House, Westminster, S.W.:
January 18, 1916.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

A LIST OF WORKS PROJECTED OR COMMENCED.

ENGLAND.

DEVON.

Bulkworthy.—Public elementary school for forty-two places.

DURHAM.

Darlington.—Proposed R.C. school, Larchfield.

HERTFORDSHIRE.

Hitchin.—The "Three Horseshoes," Norton; extension.

Willian.—The "Fox" inn: alterations.

LANCASHIRE.

Blackburn.—Cinema house, Meadow Street, for Mr. Fred. Sanderson.
Eight houses, Brooklands, for Messrs. Penny Bros.
Mill, Burnley Road: extension, for Messrs. John Baynes, Ltd.

Bolton.—Fourteen houses, Moorside Avenue, for Mr. J. England.
Ten houses, Welbeck Road, for Mr. T. Woods.

Burnley.—The "Hope and Anchor" inn, Royle Road and Vernon Street: rebuilding, for Mr. J. Lord.

Bury.—Power Station, Chamber Hall: boiler-house extension, for the Town Council. Mr. J. Byron, Ltd., contractor, near Woolfold.

Manchester.—Factory, New Mount Street: addition. Mr. G. W. Stokes, architect.
Factory, Cheetham: additions. Mr. P. Cummings, A.R.I.B.A., architect, 51 King Street.
The "Brunswick" Hotel, Upper Brook Street: alterations, for Hardy's Crown Brewery, Ltd.
Union Mill, Weaver Street, Openshaw: additions. Mr. K. Brearley, architect.
Works, Cheetham. Mr. J. Sunlight, architect, 4 St. Ann's Square.
Workshop, Moston Lane. Mr. G. K. Timperley, architect, 1 Princess Street, Albert Square.

LINCOLNSHIRE.

Scunthorpe.—Proposed lodging-house, for Mr. T. East.

MIDDLESEX.

Brentford.—Union Offices and Warkworth House: alterations, &c., for Board of Guardians.

NOTTINGHAMSHIRE.

Nottingham.—Picture palace, Welford Road. Messrs. F. Ball & Smith, architects, 23 King Street.

STAFFORDSHIRE.

Alrewas.—House, Main Street: alterations, for Mr. Upstone.

Lichfield.—Motor garage, Penkridge Bank Road, for the Vincent Motor Company, Alrewas.

SURREY.

Guildford.—House, Pewley Hill, for Mr. W. H. Bateman.
Houses, Aldershot Road, for Messrs. Rutter & Co.
Houses, Woking Road. Messrs. Clemence & Moon, architects, 53 High Street.

SUSSEX.

Hastings.—No. 2 North Terrace, Halton: conversion into flats. Mr. R. Hembrow, architect, 65 Queen's Road.
The "Plough" Inn, Priory Road: garage. Mr. J. Hunt, architect. 12 Alpine Road.

WARWICKSHIRE.

Marston Green.—Two houses, Coleshill Road, for Mr. T. F. Gibbs, Mosley.

Polesworth.—House, Gipsy Lane, for Mr. H. Jones.

WESTMORLAND.

Ambleside.—Garage, Waterhead. Mr. Pattinson (of Windermere), builder.

Kendal.—No. 95 Stricklandgate: additions, &c. Mr. S. Shaw, F.R.I.B.A., architect, 45 Highgate.

YORKSHIRE.

Batley.—Batley and District Hospital: proposed enlargement (£4,500).

Birstall.—Mill: extensions, for Messrs. Taylor, Yielding & Co., Ltd.

Hull.—Victoria Street: additions, for Messrs. W. Jackson & Sons, Ltd.
Southcoates Lane: additions, for Messrs. F. Robinson & Co.
Mission Hall, Coltman Street, for Holiness Church trustees.
Economiser House, Wincolmlee, for Messrs. Raines, Porter & Seddon.
Twelve houses, Hessle Road, for Mr. J. B. McMaster.
British Oil and Cake Mills, Wincolmlee: extensions.
Shop and public building, Story Street, for Mr. T. H. Dixon.
Warehouse, Bank Side, for Messrs. Blundell, Spence & Co.

Mirfield.—Brass Works, for Messrs. Buckley, Huddersfield.

WALES.

Aberystwyth.—No. 37 Terrace Road: alterations, for Messrs. T. Ellis & Co.
The Old Bank, Pier Street: alterations, for the City Brewery Company.

Dowlais.—No. 34 Lower Union Street: addition, for Mr. W. W. Meredith.
The Oddfellows' Hall: motor-house enlargement.

Merthyr Tydvil.—Motor showroom, garage, &c., High Street, for Mr. J. Lewis.
Shops and offices, John Street, for Mr. J. W. Morris.

SCOTLAND.

Aberdeen.—The Albert Sawmills, Baltic Place: store. Mr. R. R. Gull, architect.
Engineering Works, King Street Place: addition, for Messrs. J. M. Henderson & Co.

Dundee.—Children's Hospital for twenty cots (£2,500).

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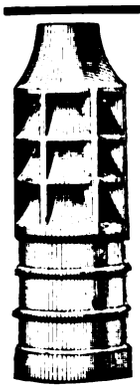
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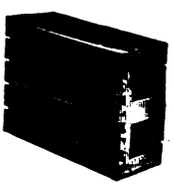
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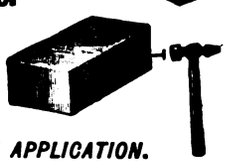
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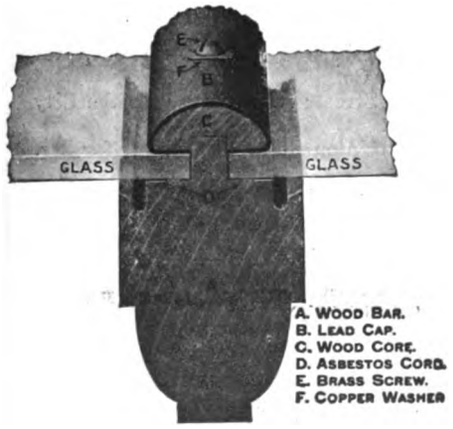


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FORTHCOMING EVENTS

Friday, January 28.

Civic Arts Association : Inaugural Meeting at the Mansion House, London, at 3 P.M.

Monday, January 31.

Royal Institute of Architects : Ordinary Meeting : Announcement of the Council; Nomination for the Royal Gold Medal, at 3 P.M.

Victoria and Albert Museum : University Extension Lecture XV., on "Spanish Renaissance Architecture (1500-1900)," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Wednesday, February 2.

Royal Archæological Institute : Paper entitled "Wall-Paintings in Arundel Church, Sussex, compared with Similar Contemporary Examples," by Mr. Philip M. Johnston, F.S.A., at the Society of Antiquaries, Burlington House, W., at 4.30 P.M.

University of London : The second of six lectures on "War Memorials," by Professor S. D. Adshead, M.A., F.R.I.B.A., at University College, Gower Street, W.C., at 5.30 P.M.

Carpenters' Hall : Lecture entitled "Memorials and Monuments," by Mr. Lawrence Weaver, F.S.A., at 7.45 P.M.

Institute of Sanitary Engineers : "The Activated Sludge Process of Sewage Purification," by Professor G. J. Fowler, D.Sc., F.I.C., at 7 P.M.

Thursday, February 3.

British Museum : University Extension Lecture XVI., on "Roman Architecture (B.C. 100-A.D. 300) : The Thermæ in Rome and the Provinces," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

TIMBER SUPPLIES IN 1915.

THE statistics of the importation of timber into the United Kingdom during the past year have to a certain —or, rather, uncertain—extent been vitiated by the Board of Trade's suppression of some of the figures relating to a portion of the import for Government account. Large quantities of timber have been brought into this country by Government steamers (requisitioned ships), and these have been excluded from the Board of Trade's returns giving the statistics of wood imports for the year. These direct imports do not make up the whole of the timber taken by the Government, equally large or possibly larger quantities imported in steamers under ordinary charter having been purchased on Government account.

Taking the Board of Trade returns for last year as they stand, we find that although the quantity of timber imported has been rather over three-quarters of a million loads less than in the preceding year—the direct importation by the Government being excluded—the import in value has been over seven million pounds sterling greater. In their annual wood report Messrs. Foy, Morgan & Co. express their opinion that "a fair estimate of the proportions in which the extra outlay, some £7,000,000 for approximately the same quantity of wood goods, this year as compared with last, has been divided among the fortunate participants, would be to ascribe £2,000,000 to the producers abroad and £5,000,000 to the shipowners."

Another direction in which the reticence of the Board of Trade has vitiated the statistics of our imports is in the apportionment of the whole import between the various producing countries. The probability is that the figures given with respect to Russia, and to a lesser degree those relating to Canada, are understated, just because the Government transports have been utilised in those directions; while, on the other hand, the figures for Sweden and Norway may be accepted as tolerably correct.

As might be naturally expected, the feature of the relative distribution of exports has been the decline of those from Russia, as compared with those from Scandinavia and America. Whereas between 1904 and 1913 Russia's share had steadily increased from a third to one half, in 1915 Russia's proportion fell to 17 per cent., whilst that of Sweden and Norway rose to 48 per cent., and the export from Canada and the United States to 30 per cent. of the whole. The reason for this has been, no doubt, not only the war-resultant difficulties of Russian producers and shippers, but the huge diminution of better-class building in Great Britain during the past year, for of late years the superiority of Russian wood for good joinery over that of Scandinavia has been very strongly marked; and with the decline of building the demand for such timber has diminished.

The distribution of imports amongst various ports of our seaboard appears to have been dictated not by the requirements of different localities, but by the view taken by shipowners as to the preferable points of discharge, either with the object of minimising the danger of the voyage or of avoiding delay from congestion. Thus the ports of the South Coast of England and the east ports of Scotland have experienced a heavy deficiency, and Ireland one of some 10 per cent.; but the North-East Coast, the Clyde, the Mersey, the Bristol Channel ports, and London, have either maintained or improved slightly their relative position; and the Humber ports have increased their imports during the past season to the extent of 25 per cent. beyond those of the preceding year.

Increased prices of timber f.o.b. and high freights, which have raised the import cost of timber by some 50 per cent., have not prevented timber merchants from a general enjoyment of great opportunities for money making, for wood has proved to be among the raw materials most essential to the efficient conduct of the war, and the lessened demand of the building and cabinet trades has thereby been effectively neutralised.

The outlook for the new year is for the timber merchants promising, for the problem remains the same, and points to the continuance of stinted and dear supplies with an insistent and imperative demand, at least so long as the war lasts; and that, we fear there can be little doubt, will be till the end of the year and beyond.

What the prospects are as regards prices when peace at length and happily arrives is perhaps more important from the point of view of the majority of our readers. Undoubtedly the conditions of trade will again be revolutionised. The war demand will cease, and freights almost certainly will drop; but much will depend, as regards the immediate modification of prices in the timber trade, on whether the cessation of hostilities occurs early or late in the shipping season. There will no doubt, when things have settled down, be a great demand for timber throughout Europe; but the opinion of Messrs. Foy, Morgan & Co. is that the timber trade "must look to a great increase in turnover rather than to abnormal profits on a restricted business for the profitable character of the business of the future."

Hardwoods have generally experienced a considerable diminution of demand, owing to the inactivity of the furniture and building trades, but prices have, as a rule,

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been maintained, as the lessened demand has been accompanied by smaller supplies, owing to the high cost of freightage, and in some instances the impossibility of obtaining it at any price.

Thus the import of mahogany in 1915 was little more than a quarter of that in the preceding year. All the mahogany producing districts show diminished returns, but the principal cause of the remarkable decrease is the enormous decline in the importations from the West Coast of Africa, which has dropped from 19,300 tons in 1914 to 2,468 tons in 1915. Shipments from Cuba, too, have practically ceased, only ten logs having been imported into London during the whole of the year, as against 4,317 tons in 1914. Honduras has sent us about half and Mexico rather more than a quarter of the previous year's exports. There appears to have been an idea among shippers that the time was favourable for the export to England of inferior and defective timber, but the result has shown that the idea was fallacious, as what demand there has been for mahogany has been for better-class wood.

Rifles have caused a good demand for walnut, which traditionally is the only suitable wood for stocks. Personally we think the tradition overrated in importance, but the fact remains. The best qualities only are, of course, accepted for Army purposes, and so prices have been very high. American ash has also been in great demand for military purposes, and hence the high prices which have given English owners of woodlands the opportunity which Mr. Duchesne has advised them to take. Oak has been required in excess of imports, and prices are advancing, as stocks are low and tonnage for further shipments almost unobtainable.

Teak has seen an equality between imports and demand, and the stocks in the London docks remain steady, and at recent rates rather more than sufficient for a whole year's consumption. But there appears to be a prospect of a diminished supply for the coming twelve months, so that probably prices will advance. Practically no teak has come from Moulmein during the past year, but the importations from Rangoon have been more than double the previous year's total. Those from Bangkok have fallen off by 65 per cent. as compared with 1914.

Australian hardwoods have been influenced by the difficulty of obtaining tonnage and the consequent high freights which have reduced imports, but here again there has been a shrinkage in demand. Kauri pine has been exported in quantities exceeding the demand, and is now intrinsically cheap.

NOTES AND COMMENTS.

AT the inaugural meeting of the Civic Arts Association, which is to be held at the Mansion House of London this (Friday) afternoon, we may hope that there will be manifested a broad-minded outlook. Civic Arts embrace everything that goes to make a city beautiful. There must be no limitation of scope to any one form of art, still less to any particular school of thought or mannerism. From the fact that the Association expresses the intention to give particular attention to war memorials, both private and public, and to hold an exhibition of designs for memorials of various kinds, there has already arisen in the public mind a feeling that this is to be the predominant activity of the new body.

Again there appears to be an intention—we hope the apparition is unsubstantial—to capture as much as possible of the harvest of memorial making for the Civic Arts Association, and those whom it may favour. The founders of the Association, if they are to be deemed worthy of public support, of respect from the general body of artists—and we include in that body not only those who are workers in the "fine arts," but all so-called craftsmen who are artists—must show a Catholic appreciation of all their fellow-workers, even though they may not be amongst the elect of the Art Workers' Guild or the Arts and Crafts Exhibition Society.

With regard to memorials we hope to see a strong effort made in favour of the collective rather than the individual memorial. The unity of collectivity may be what you will, the parish, the town, the county, the regiment, the nation. Do not let the proud piety of the mourning survivors be frittered away amongst a host of similar patterned trivialities like headstones in a modern cemetery. One outstanding characteristic of the War has been the welding together of the sons and daughters of the Empire. Do not let a recrudescence of individualism falsify that characteristic. We particularly regret in this connection the suggestion in the circular issued by the Association that "small 'statuettes' presenting naval or military types might well be modelled for reproduction by skilled craftsmen." This is the trade view of the ecclesiastical tailor-cum-art furniture purveyor type of limited company, and casts a slur on the whole action of the Civic Arts Association, suggesting that it is out to make business.

In these Notes on October 29 last we referred to the approval by the Education Committee of the London County Council of an offer by the Professional Classes War Relief Council to provide decorative paintings for the walls of some of the Council's schools. We are glad, therefore, to read that the Education Committee now report that:—

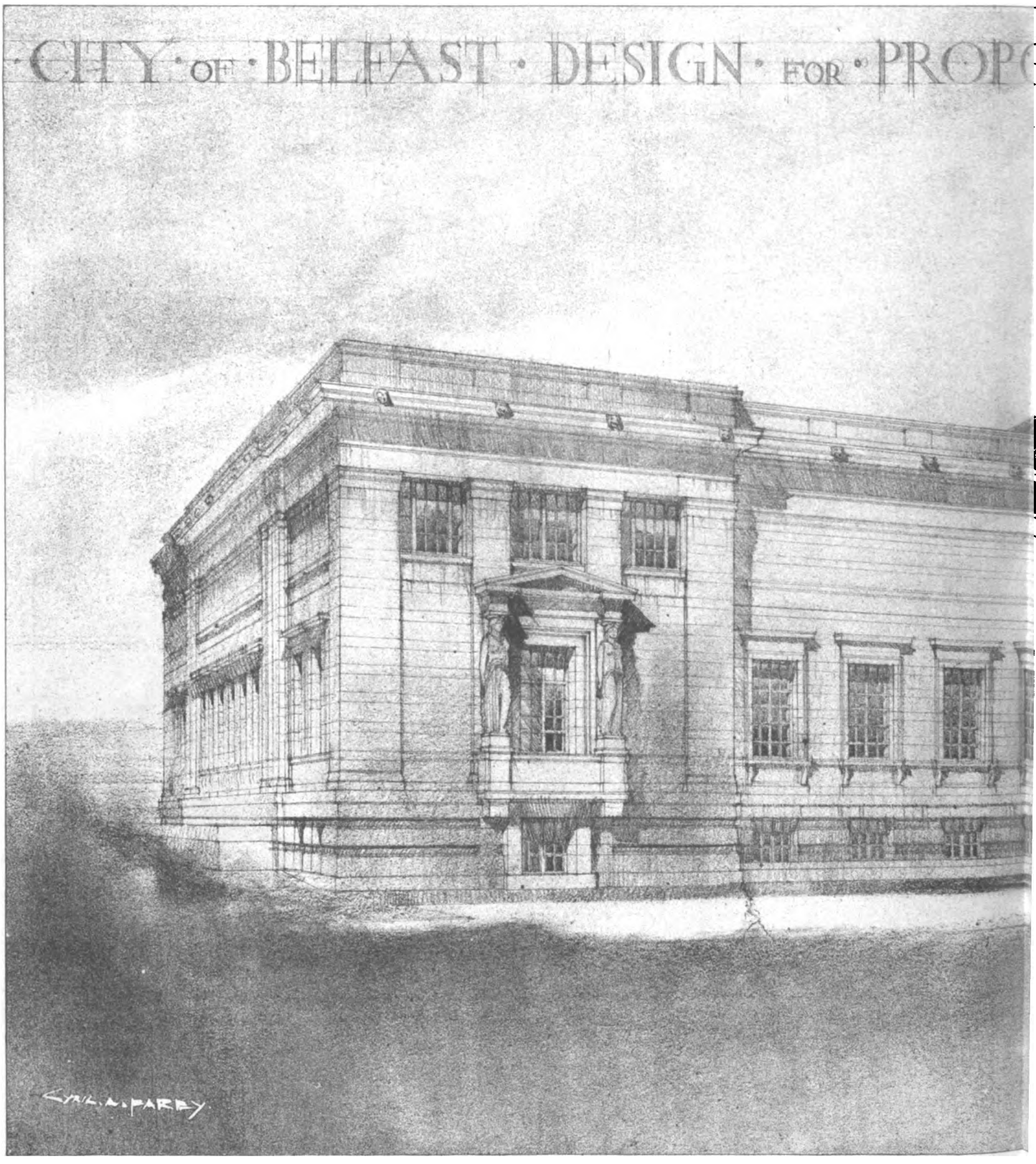
In continuation of our report on October 26, 1915, certain of our members have conferred with the undermentioned artists representing the Professional Classes War Relief Council: Mr. W. R. Colton, A.R.A., Mr. John Hassall, R.I., Mr. M. Spielmann, Sir Aston Webb, K.C.V.O., C.B., R.A. Eight schools, situated in poor districts, were selected by us, and the representatives of the War Relief Council, after visiting several of the schools with a view to deciding which, in their opinion, would be best suited for their purposes, have recommended the first floor (boys') hall of the Devon's Road School (Bow and Bromley) in which to carry out their first scheme of decoration. They have submitted to us in outline an "Empire" scheme of decoration illustrating life and industry in the British Dominions beyond the seas, which we consider should be approved. Steps will be taken by the War Relief Council to proceed with the preparation of the scheme, and we propose, in due course, to ask the chairman of the Council to unveil the work and to receive the presentation on behalf of the Council. We recommend: That the scheme of decoration illustrating life and industry in the British Dominions beyond the seas, submitted on behalf of the Professional Classes War Relief Council, for decorating the walls of selected Council schools, be approved.

The decision of the Government to close all public museums and galleries depends for approbation or reprobation upon its intent. If this is as has been stated, we hope erroneously, in the exercise of economy it is bad. It means a slight reduction only in the cost of upkeep, for some attention thereto must be maintained, and the whole procedure is humbug. If, however, the closing is intended to facilitate the safeguarding of the treasures within our museums from the attack of air-craft, or even of malicious alien visitors, the action is wise though belated. Obviously the first step to installing effectual means of protection, whether by removal or otherwise, is the closing of museums and galleries to visitors.

The long drawn-out litigation in the libel action brought by Mr. J. H. Langlands, for many years advising architect to the Dundee School Board, against the publishers and proprietors of "The Dundee Advertiser," has at last been closed by the House of Lords, whose judgment against Mr. Langlands was expressed by Lord Haldane, who in moving that the appeal of the newspaper owners be allowed, said that, in dealing with a news-

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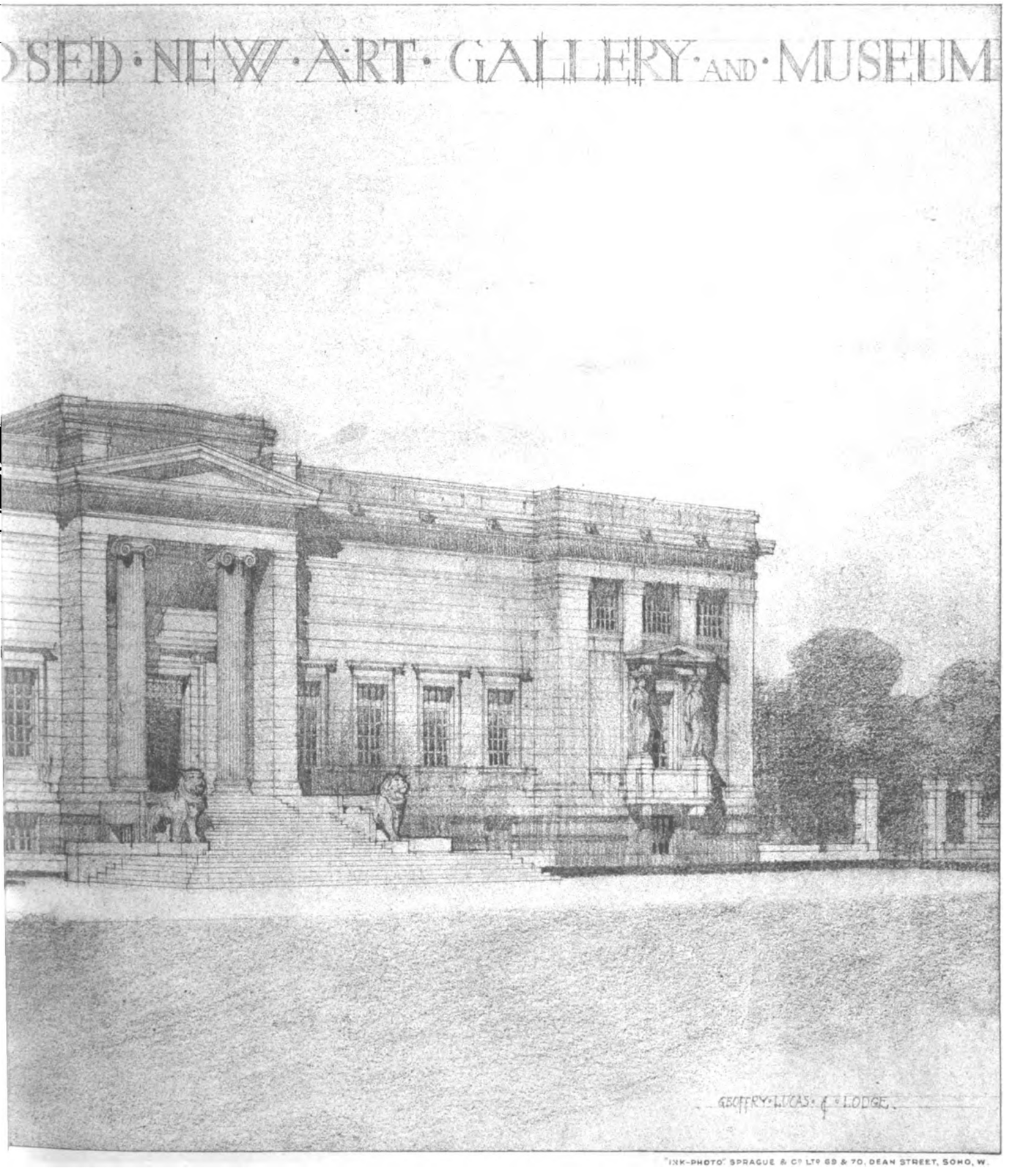
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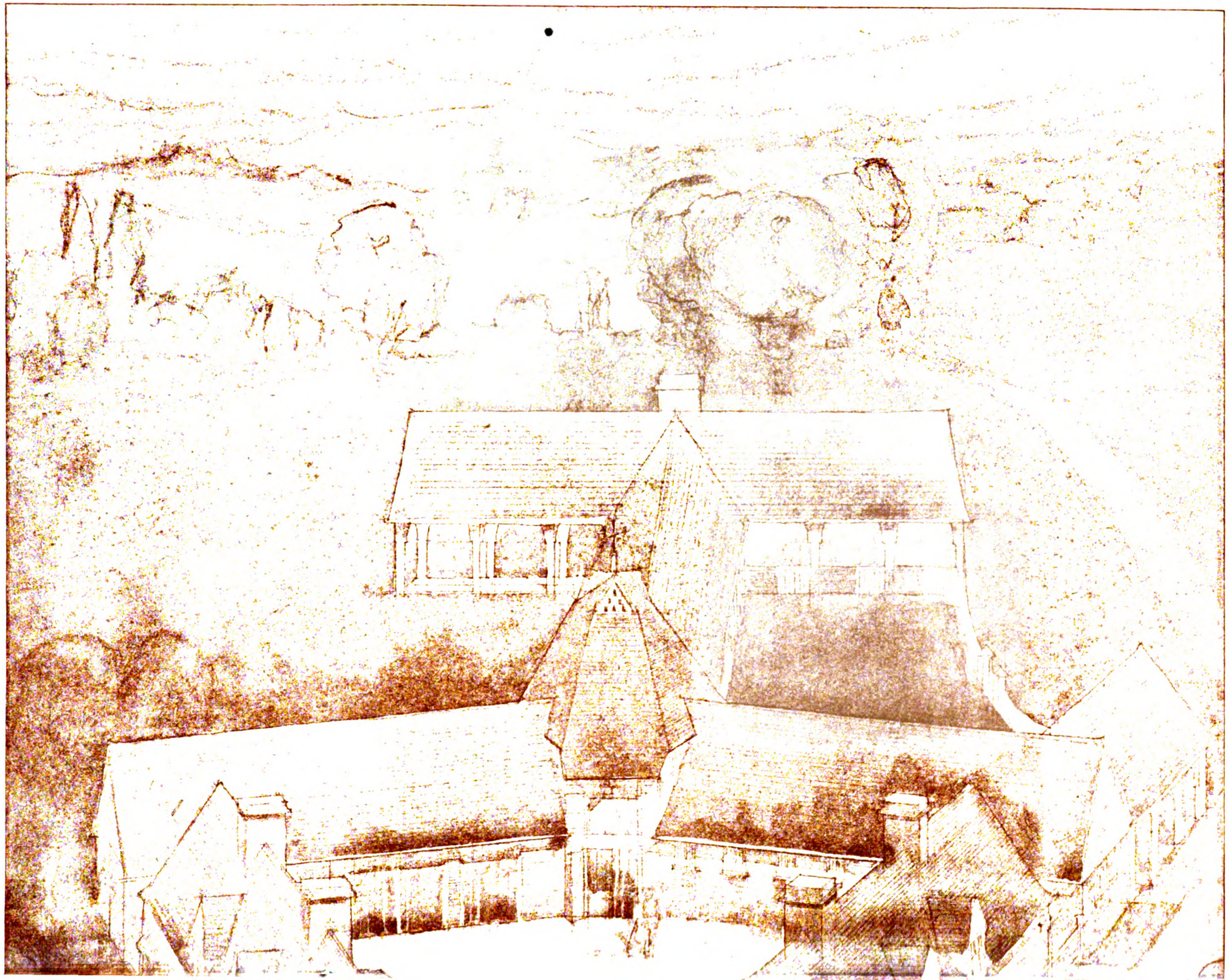
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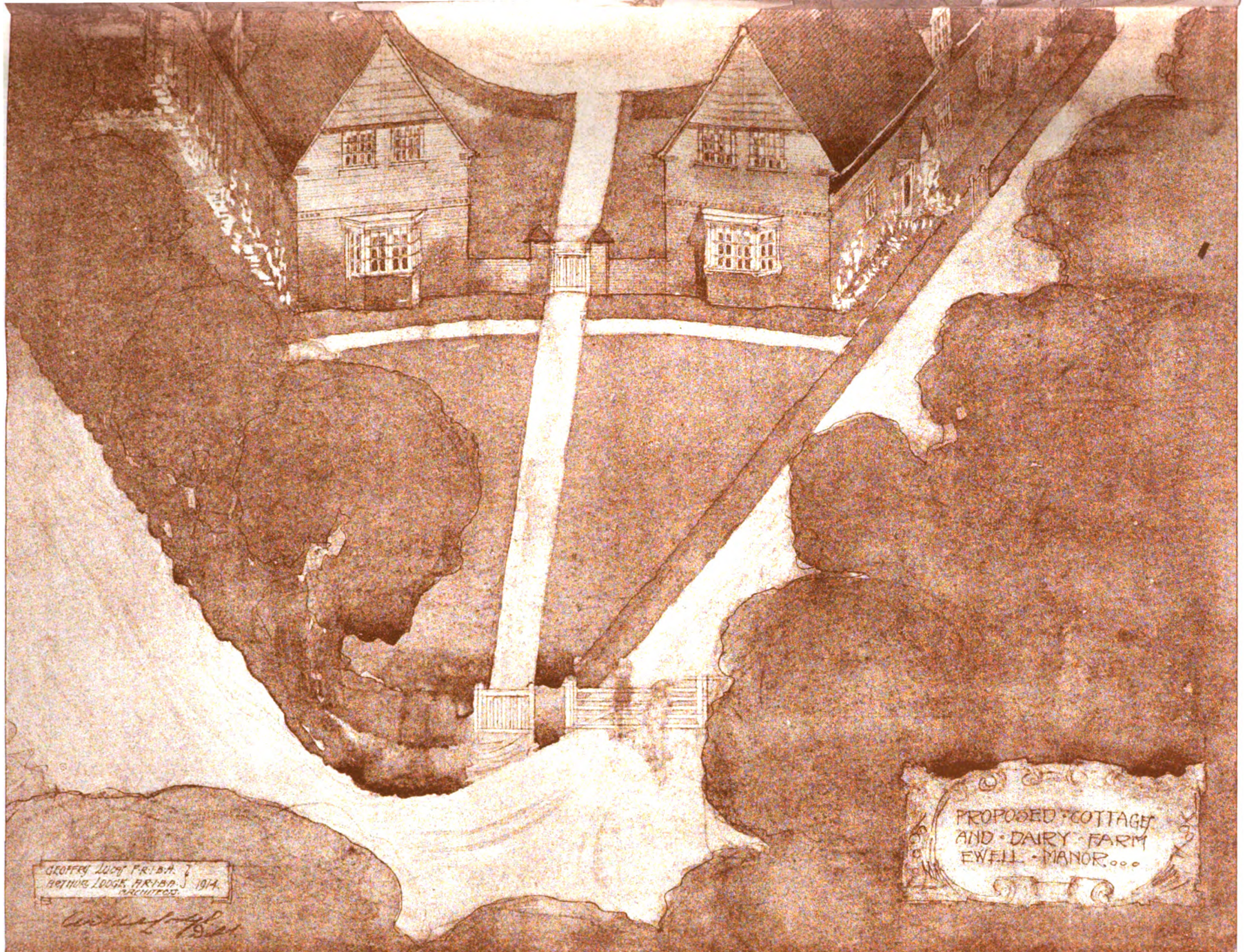
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UNIVERSITY

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paper article written about a public functionary, considerable latitude was allowed by the law. A gentleman who occupied the position of architect to the Dundee School Board was a public official and must expect criticism—and such criticism as the law did not recognise as justified in the case of a private person. The law readily admitted that it was in the public interest that criticism should be brought to bear upon the conduct of public persons.

The action of the Government with respect to certain land commandeered from the Coventry Board of Guardians, and the erection of a munitions factory thereon, invites speculation as to what is to happen to these national workshops after the War. If they are not to be scrapped, some of the millions now being expended may be regarded not as war cost, but as invested national capital. Are these factories to be retained as national property, or are they to be thrown on the market for sale? It is difficult to understand, except on the assumption that the factories are not to be scrapped, why the Government decline a loan of the land for nothing and insist on the purchase of the freehold. The facts are expressed in a letter from the Local Government Board, who wrote to the Guardians thus:

"In reference to your letter of September 8 last reporting that the Guardians of the Coventry Union had been approached with a proposal that certain land belonging to them should be handed over for a munitions factory, that the Guardians had offered to let the land for this purpose at a nominal rental, that their offer had been refused, and that the land had then been taken over under the Defence of the Realm Act, I am directed by the Local Government Board to state that on receipt of that letter they at once communicated with the War Office, and laid before that Department the representations made by the Guardians, suggesting that the revised offer made by the Guardians would meet the needs of the situation. They have, however, now been informed by the War Office that, while the Army Council fully appreciate the generous and public-spirited offer of the Guardians to allow the use of the land free of charge during the period of the War, and for as long thereafter as may be considered necessary by the War Department, a more secure tenure of the land is required, as a factory is being erected thereon at very considerable expense; half of the factory is already fitted up with machinery and in full working order; and that it is very desirable that terms should be settled for the permanent acquisition of the required land belonging to the Guardians by amicable arrangement. In these circumstances, I am to request that the Guardians will give further consideration to the matter with a view to the settlement of terms for the sale of the land."

The light thrown upon life of the past by the careful examination of almost forgotten documents by zealous antiquaries is nowhere better illustrated than by the transcripts of York wills, made by Mr. R. B. Cook, who records his view that perhaps the most interesting will in the whole collection was one hitherto unpublished, of Thomas Bracebrigg, weaver, who was Lord Mayor in 1424. Bracebrigg was Chamberlain in 1411, and Sheriff in 1416; he figured very prominently in the York Memorandum Book second series. In 1435, a year before he made his will, he had done something to a fellow dignitary—the nature of the offence was not disclosed—and the Council released him from his freedom and his aldermanship. The trouble was got over, however, and at the end of three days he was restored to his freedom and aldermanic office. The will, which was proved in May, 1437, was of enormous length, and after providing for his burial in St. Saviour's Church "next to the bodies of my wives and children lately buried there," there are detailed provisions for wax candles and torches, some of the former to be renewed yearly for fifteen years after his death. There are bequests for masses in many churches, to every rector and chaplain regularly celebrating of every church in the city and suburbs 4*d.*, for which he gave 100*s.* as sufficient (an estimated number of 300 clergy), to every parish clerk 4*d.* to ring the bells (forty-five parish clerks). Also to the "anchorite recluses" (women) in St. Anne's Churchyard, Fishergate; at All Saints' Churchyard, North Street; and St. Margaret's Churchyard, to pray for his soul; and to the hermit at St. Catherine's Chapel. There were large distributions of alms to poor and needy, and ample provision for funeral expenses "that my worthy friends and neighbours to the number of thirty shall on the eighth day after my death come to lunch that shall suitably be served to them at the care and discretion of my executors." On the day of the funeral his "poor neighbours of the parish and other indigent" were to have "luncheon at the choice of my executors, 50*s.* with bread and drink and suitable food." The Guild of Weavers and "the Society of the Lord's Prayer" received bequests, while bread and drink and suitable food were to be given to the prisoners in York Castle, in the Archbishop's Prison (Peter Prison), and in the Kidcote, and they were also to receive a penny a week each for fifteen years. A most curious direction to the executors was: "As soon as I am infirm and keep my bed my executors shall order and buy a thousand white loaves, called farthing loaves, and distribute them to the poor according to the good opinion of the executors." He provided that all his debtors able to pay should be compelled to pay, but those unable should not be sued or molested; if evidence were not forthcoming of a debt, "then my executors shall give credence to the assertion and fidelity of my debtor committing all such debts to the Divine will." Among bequests to relatives he made provision that failing issue to his children by his two former wives the property which these mothers brought him should revert to their families. He also enjoined his son to "hold himself humbly and graciously to his mother in agreeable conversation and good manners."

ILLUSTRATIONS.

DESIGN FOR PICTURE GALLERY AND MUSEUM, BELFAST.

THIS design was submitted in the recent competition by Messrs. Geoffry Lucas & Arthur Lodge. The drawing, by Lieutenant Cyril Farey, was exhibited in this year's Academy.

DESIGN FOR NEW HOUSE AT BURNHAM, BUCKS.

THIS is the first sketch design for a new house at Burnham, Bucks. The house as executed is a formal design of Georgian type. The drawing, by Lieutenant Farey, was exhibited in this year's Academy. The architects are Messrs. Geoffry Lucas & Arthur Lodge.

DAIRY FARM AND COTTAGES, EWELL MANOR, NEAR MAIDSTONE.

THIS is a design for a pleasure dairy farm for twelve cows, with dairyman's and two farm hands' cottages attached, for V. B. Tritton, Esq. The arrangement of the buildings arises from conditions of site, aspect, &c. The building was about to be commenced at the outbreak of the war, but its execution has been postponed. The drawing, by Lieutenant Arthur Lodge, of the 24th London Regiment, was exhibited at this year's Academy, the architects being Messrs. Geoffry Lucas & Arthur Lodge.

THE alterations and improvements which have been proceeding for the past six months at Painter-Stainers' Hall, under the superintendence of Mr. H. D. Searles-Wood, F.R.I.B.A., are now nearing completion. Last week the Court of the Painters' Company were able to meet for the first time in the much enlarged and beautified Court Room, and general approval was expressed with all that had been effected.

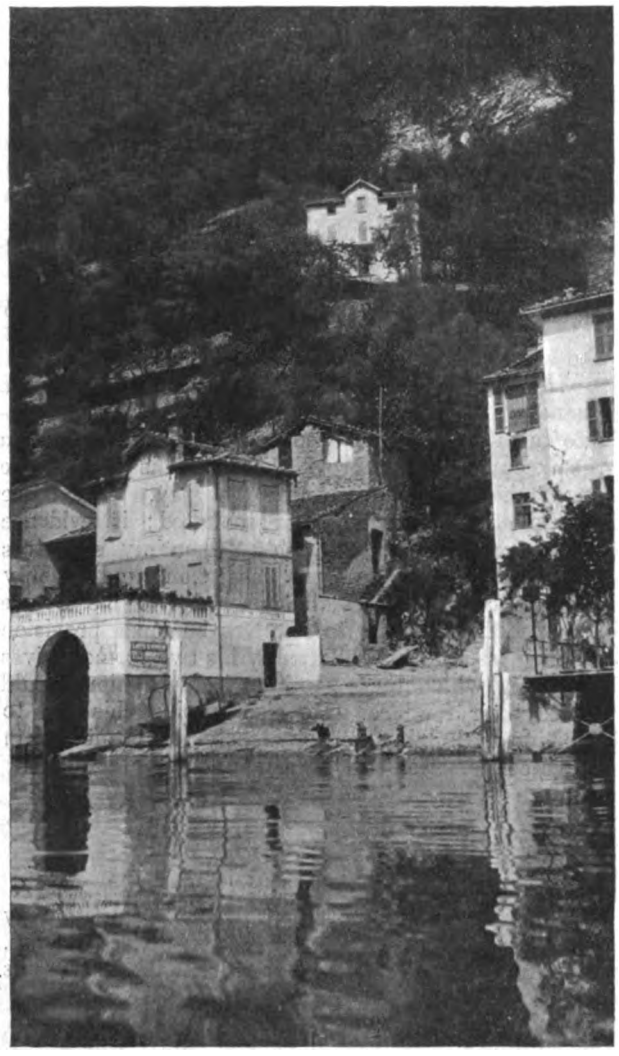
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AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—IV.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

To those whose training has rendered the reading of plans and maps almost second nature, it is really somewhat astonishing to find with what ease and comfort quite extended journeys may be undertaken.

Although a knowledge, however slight, of Italian or French is undoubtedly very useful, yet persons entirely ignorant of both languages may travel through



LAKE-SIDE SCENE, LAKE OF LUGANO.

Switzerland and Italy in reasonable comfort. It is perhaps advisable under the latter circumstances to keep, as it were, to the recognised or mostly-used routes or tracks.

A little knowledge of French is exceedingly useful, for most Italians have a peculiar partiality for that language, and this little knowledge prevents the traveller being imposed upon, as well as being exceedingly useful in other important directions.

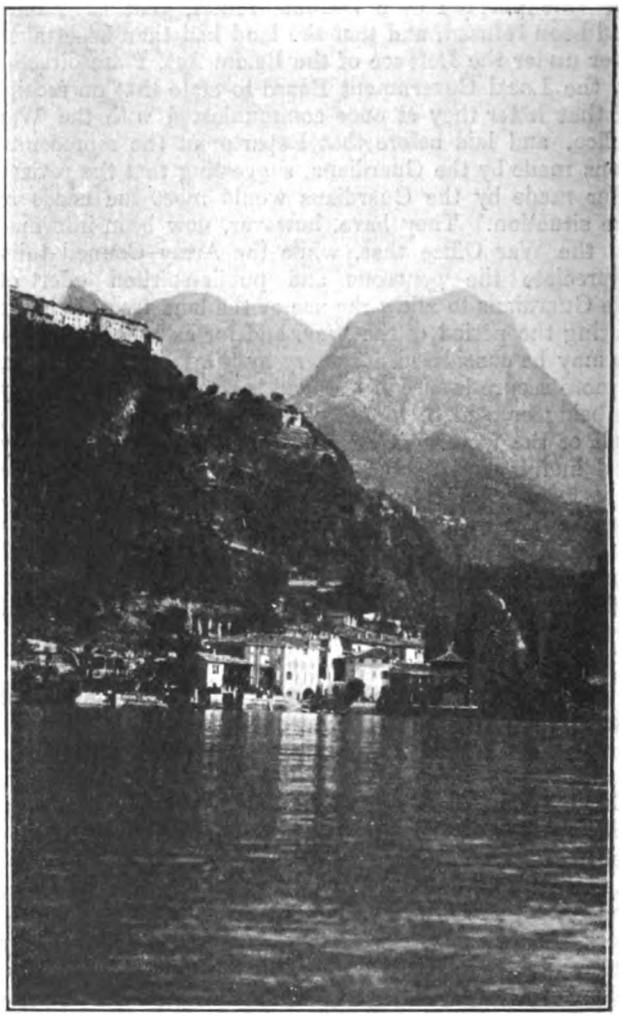
It is to be regretted that the vast bulk of English people do not take kindly to long-distance travel, especially beyond the confines of the British Isles, and therein lies, no doubt, the reason for much of that innate conservatism peculiarly characteristic of the Englishman; but in these days of "conducted" excursions, cheap and fairly rapid travelling, there appears to be very little reason why the coming generation should not avail itself of the immense facilities offered for fairly extensive travelling. The architect, apart from, perhaps, the lack of funds and the difficulty experienced in getting a sufficiently long holiday, requires no pressure to be brought to bear upon him to undertake any of these foreign rambles which are productive of so much genuine pleasure and education, for the writer does not think that the architect can be charged with having the bump of conservatism very well developed, at least not in the sense before indicated.

The ability to thoroughly grasp the maps of the various districts is more than "half the battle," for these maps are now published to large and small scales, and with the aid of these there is not the slightest difficulty in finding one's way about any part of this most difficult country.

The traveller frequently gets annoyed by the apparently incessant examination of luggage at frontier stations (the annoyance is increased if such examinations take place in the middle of the night), but the officials at the Italian frontier stations are very courteous and lenient, and it often happens that one's luggage is not seriously "disturbed" during an entire tour by the simple declaration that no prohibited articles are carried.

One thing is important, and that is, that the luggage should not be sent on by goods train, for many reasons. The traveller should, when possible, keep his eye on his luggage all the time.

With the intelligence usually possessed by the members of the architectural profession, a little knowledge of French, good maps, little luggage, sufficient money, and plenty of confidence, there are no terrors to be met with, and all difficulties are easily surmounted.



LAKE OF LUGANO—CASTELLO, SAN MAMETTE, AND VAL SOLDA.

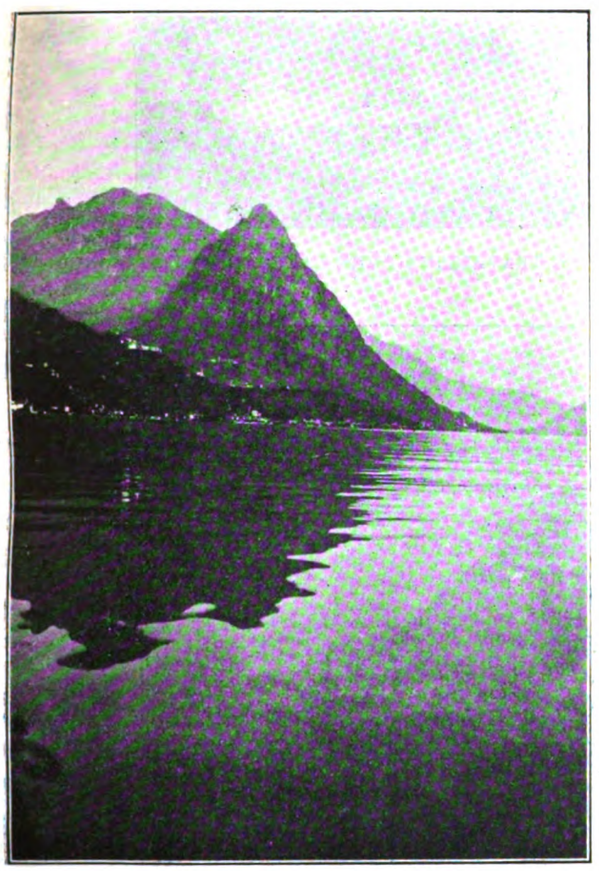
The various Italian lakes may with ease be thoroughly explored by the aid of comparatively small maps to a scale of about two miles to the inch, and with similar maps the larger cities of Northern Italy, such as Milan and Venice, may be studied with the greatest

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comfort and without the assistance of any (human) guide.

It is due to the desire on the part of most travellers to keep strictly to the "beaten track" that many of the hidden beauties of these districts are not inspected; but if one is possessed of the qualifications set out above there is no reason whatever why tracks unknown to the regular excursionist may not be chosen, and the discoveries on such occasions appear to have quite a smack of special flavour.

Lugano (950 ft. high, with a population of about 13,000), in the Swiss Canton Ticino, of which it is the largest town, is beautifully placed on the Lake of Lugano, and although for any extended stay the



VAL SOLDA, LAKE OF LUGANO.

summer season is perhaps the right time, yet in the autumn, if one is fairly fortunate in the matter of weather, a reasonable time may be spent here with considerable enjoyment.

It forms a convenient head-quarters for sundry little excursions to numerous places of great interest in close proximity.

The scenery is in character distinctly Italian, and surrounded by fine mountains, clad in garments of foliage the lower hills of which abound in chestnut and walnut trees, one is tempted to suggest that the individual who finds Lugano other than entrancing is certainly difficult to please.

To the south rises Monte San Salvatore, in the north-east Monte Brè and Monte Boglia, to the east lies Monte di Caprino beyond the lake, with Monte Generoso on its right. On the north is seen the wide valley of the Cassarate with its background of mountain ranges.

In Lugano there is a fine Town Hall built in 1844 on the west of the Piazza Giardino close to the Lugano-Centrale landing-stage, and to the north the Piazza della Riforma and to the west the Piazza Rizziero Rezzónico, the three principal squares of Lugano.

Extending along the lake is the favourite promenade which in the cool of the evening is much frequented by the visitors, and at one end is the Piazza Guglielmo Tell, in which there is a small statue of Tell with a fountain and also (it is somewhat difficult to say why) a monument of Washington.

The Riva Antonio Caccia is an extension of the quay to the south, connecting the old town with the suburb of Paradiso at the base of Monte San Salvatore.

The town is really divided into two distinct portions, viz., Lugano (the old town) and Lugano Paradiso—the denominative appellative serving to indicate in the latter instance the type of neighbourhood, and in this the name given to that portion of the town is justified. In situation, lay-out, and appearance this part of Lugano is fully entitled to the term Paradiso.

One is, however, disposed to suggest that the omission of the second word in the name of the older portion of the town is apt to carry certain conclusions, which in view of the remarks previously made with reference to parts of the old town and its inhabitants, are perhaps likely to be not far from the truth.

The difference between these two portions of Lugano is very striking, Lugano Paradiso consists almost entirely of large artistically designed villa residences, hotels, pensions and such like, most of which are detached premises situate within large well laid-out grounds.

The architectural character of these premises in many cases is certainly pretentious, but in addition, the settings are so beautiful, with their rich-coloured flower-gardens, well laid out and well kept, ablaze with colours of all hues,



STREET SCENE IN LUGANO.

backed by the thickly wooded mountains and overlooking the beautiful waters of the lake, added to almost perfect atmospheric conditions, that they make this little corner of the lake a veritable Paradise.

The old town, with its quaint colonnaded footways and queer little winding streets, apparently laid down originally without any preconceived idea of order, is certainly picturesque. It would appear as though the dominating idea responsible for the general lay-out was

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LAKE OF LUGANO, WITH AEROPLANE TRAVELLING OVER LAKE.



LUGANO AND MONTE BRE.



LUGANO PARADISO.

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to prevent, if possible, the rays of the sun penetrating into the streets, or, in any event, the windows of the houses fronting on the streets.

Typically Italian in style, the old town is crammed with artistically designed arcades, its funny little shops and workshops in the open air and the uncommon oxen-drawn carts adding beauty to the scenes. The streets are paved largely with cobbles and quite a number are provided with the old-world granite wheel-tracks. There is much of interest in the narrow twisting arteries of this old town, many of which, where the gradients are steep, are laid out in a series of cobble-paved steps, the full width of the street or lane, and with treads perhaps four or five feet from riser to riser, and architecturally there is much to admire.

The buildings for the most part appear to be erected in rough brickwork skeletons, and the architectural character and features are produced in nearly all cases by the use of cement plaster applied to this exceedingly rough brickwork foundation. The plaster work is certainly of high-class quality both as regards materials



HOTEL DE LA PAIX, LUGANO PARADISO.

and workmanship; in many cases the imitation stone-work is so well carried out that the eye of the expert is needed to detect the clever imitations.

The faces are finished much like the surface of chiselled Portland stone, and the jointing is introduced so well that the deception is in many instances complete.

These remarks apply more particularly to the larger business premises, where the architectural features and character are pronounced and somewhat pretentious.

The Church of San Lorenzo, on the hill just under the railway station, is worth a visit; it was built at the end of the fifteenth century and restored in 1908-10. It has a very fine marble façade in the Early Renaissance style, ascribed to Tommaso Rodari. The terrace in front of the station commands a fine view of the lake and the town. The general views published were taken from this point of view. One of the general views includes an aeroplane, which, at the moment of taking this picture, was travelling at a very high speed close to the surface of the lake—a difficult object to obtain a permanent record of, owing to its great speed, the distance away, and its comparative smallness.

Santa Maria degli Angioli, the old conventual church, is of much interest, and contains some very fine frescoes by Bernardino Luini. The Passion of Christ, containing several hundred figures peculiarly arranged in two rows, is perhaps one of the largest ever executed by Luini. Painted upon the wall of the screen in 1529, it is a wonderful work. The foreground includes three large crosses with Roman soldiers close by, the holy women and the executioners casting lots for His garments.

Christ is also shown on the Mount of Olives, Christ taken prisoner, the mocking of Christ, the bearing of the Cross, the entombment, Thomas's unbelief, and the Ascension. There are also in this church fine frescoes by Luini of the Madonna and the Last Supper.

After spending the best part of a day, or even two days, sauntering round the town and visiting those buildings worth seeing, one's attention naturally turns to the lake, with the brilliant sunlight dancing upon its clear surface.

The Lake of Lugano is about twenty miles in area, is some 890 feet above sea-level, and has a depth in its deepest place of about 945 feet. It is called by the Italians Lago Ceresio. Its shape is not unlike the letter S; its situation is the area containing the deepest portions of the two cross valleys, separated by Monte Salvatore and at the north and north-east ends of the valleys, between Porlezza and Castagnola, fed by the rivers Cassarate and Agno. At Lugano little petrol launches may be hired (one of these is shown in the illustration of Lugano Paradiso), and there is no better method of visiting the various points of interest on the shores of the lake than by availing oneself of one of these little vessels.

There is much to be gained by taking advantage of the greater facilities offered by the small motor launch in preference to the large passenger steamer. One is not tied to any particular time of leaving nor to any fixed route, and, more important still, places comparatively unimportant to the ordinary excursionist on the shores of the lake, but containing very interesting subjects of interest to the student may be visited. The time allowed at each place is again not governed by anything excepting one's own desires. The routes taken by the large passenger steamers are exceedingly interesting and picturesque; but there is, so far as little exploring expeditions are concerned, that strict adherence to a fixed time-table which interferes greatly with the comfort and pleasures of the student.

It was upon one of these motor-launch trips that the delightful pictures of mountain scenery, with the deep shadows cast into the lake, were taken, and those of the lake-side villages with the wonderful reflections mirrored in the waters of the lake.

(To be continued.)

NOTTINGHAM AND DERBY ARCHITECTURAL SOCIETY.

THE second meeting of the winter session was held at the Society's room on Tuesday, January 11. Mr. F. M. Royle, the hon. sec., informed those present that a Christmas greeting had been sent on behalf of the Society to each of the twenty-six members on active service, to which the President and Vice-president had added a box of cigarettes. He had received very interesting replies thanking the members for their kind wishes.

The President proposed that a selection of the letters might be made and printed in the next annual report, and this suggestion was agreed to.

After the disposal of other business the members adjourned to the lecture room, where the Rev. F. N. Heazell, M.A., F.R.G.S., delivered a lecture on "Baal-

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beck and Damascus," which he illustrated by a number of lantern slides, mostly prepared from photographs taken by himself.

He stated that Baalbeck is reached from Aleppo by a railway journey of eleven hours. The chief object of interest is the ruins of the great Temple of the Sun. In the time of the Roman emperors, Baalbeck was the central point of an oriental form of worship which had existed from very early times.

The ruins are entered by a modern flight of steps which lead to the propylæa, and this admits to the hexagonal forecourt by means of three gates. Through the western gateway of the forecourt, the Great Court, 450 feet by 400 feet is reached, surrounded on three sides by double rows of columns, while in the centre are the great altar of burnt offerings and the basins of lustration. On the fourth side of the court a great flight of steps led up to the front of the Temple of the Sun, a building 290 feet long by 160 feet wide, having a peristyle of fifty-four columns. Only six of these columns of a debased type of the Corinthian order and the bases only of many more now remain.

A short distance from this temple stands the Temple of Bacchus, perhaps the finest building in anything like a fair state of preservation in Syria and Palestine. The main entrance doorway is beautifully carved, but nothing of the roof remains.

These wonderful buildings were probably erected by Antoninus Pius between the years 130 and 160 A.D. The Emperor Theodosius built a Christian church within the Great Court in the fourth century, while another part of the buildings has been used for Moslem worship.

The lecturer then showed views and gave a description of Damascus which has been called the oldest city in the world, the oldest city, that is, that has maintained a continuous existence from the days of its foundation until the present time.

There was a very good attendance which included a number of ladies and friends who had been invited.

At the close the Vice-president, Mr. H. G. Watkins, proposed, and Mr. E. R. Sutton, past President, seconded a vote of thanks to the lecturer for his interesting paper.

The Rev. F. N. Heazell replied and the meeting terminated.

INSTITUTE OF SANITARY ENGINEERS.

MR. A. P. I. COTTERELL, M.Inst.C.E., F.R.San.I., the President of the Institute of Sanitary Engineers, gave his Presidential Address at Caxton Hall, Westminster, on Wednesday, January 19. From it we take the following:—

At the end of our title stands a word that appears to be without meaning when applied to such a body as ours, formed solely for the maintenance of the science of sanitary engineering, and the improvement of the status of those who practise therein. The Board of Trade have granted the necessary application for permission to omit the word "Limited," after complying with their requirements. The Institute, as hitherto known, will then cease to exist, and in its place will rise like a phœnix the Institution of Sanitary Engineers.

In housing lies the kernel of the profession of sanitary engineering. All that we talk about—water supplies, sewerage, sewage disposal, destruction of refuse, road construction, and town planning—would have very little meaning if proper housing of the people were not its basis. The character of the building in which the home is housed is an outward and visible sign of the standing of a nation.

The term housing must include all the amenities of the community, properly planned towns, good and ample water supply, drainage, sanitary conveniences, lighting, good and convenient roads; in fact, all that makes life worth living in communities. In other words, sanitation is the measure of the advance of civilisation, and the work of the sanitary engineer is interlocked with that of the social reformer and the patriot.

It may be said that we are engaged upon a great war that needs all the country's attention and resources. How, then, can it spare time for these domestic problems? Yet it is even more important to be prepared for peace than to be prepared for war. The problems of peace need at least as careful consideration as those of war, since they are in the end of far greater moment to the human race than any problems dealing with the preparation or the prosecution of war.

The Government has admitted in its reply to Lord Parker in the House of Lords that it is already seriously considering the problem, and is assuming the responsibility that the nation will expect it to take.

In the days to come, what is likely to be the status of sanitary engineering? We all say or acquiesce in the statement that things will never be the same when this war is over as they were before. Is sanitation to be regarded as an excrescence, a luxury, that must be ruthlessly cut off when our pockets are lighter? Or is it going to be amongst the essentials that the world must not under any circumstances abandon?

The question is vital, and demands consideration. It stretches much farther than the mere interests of our profession. It is woven into the life of all nations.

We may lay hold of a few basal facts.

In the first place, the nations of the world will remain in being, even although their political status may be altered. As communities they will still exist with human needs and aspirations as great as, or greater than, before.

Secondly, many of the nations will probably be in closer economical and political alliance than ever before. It may be that the sense of interdependence will be strongly felt the world over, and will be a guiding principle in the relations of one nation with another.

In the third place, the world will be much poorer. So much wealth will have been spent in unproductive channels that this at least is an obvious fact. The expenditure of Great Britain is measured by thousands of millions sterling, and when this comes to be multiplied, not only throughout the warring nations, but amongst neutrals, who are also spending unproductively, either upon mobilised armies or in other ways, it cannot but be seen that the loss of international wealth will be enormous.

It may be as well to emphasise the difference between unproductive and productive expenditure. Unproductive expenditure is an economic term applied to the employment of capital or labour on objects that perish in the using. Productive expenditure of capital or labour is that which is expended upon objects that bring in a return equal to, or greater than, the amount expended upon them. In this sense money spent on a shell that is useless after it has been fired is unproductive, whilst money spent upon seed that raises a crop is productive.

In an illuminating article published by the "Contemporary Review" in October last, a well-known social writer, Mr. B. Seebohm Rowntree, discusses some of the social and industrial problems that will confront us as soon as peace is signed. In his view industry will pass through three stages after the war.

Firstly, a period of very serious dislocation of trade, causing much unemployment, and probably lasting for several months.

Secondly, a period of feverish trade activity, lasting for a year or more.

Thirdly, a long period of severe trade depression.

This forecast is also held in other quarters, and it may be taken to be a fairly accurate view of what is likely to happen industrially after the war, so far as any opinion can at present be expressed.

In the fourth place, we shall have to make the best use of any means at our disposal, and to aim for efficiency to an even greater extent than has been the case in the past. This arises naturally from the fact that we shall be obliged to reduce any needless expenditure when so much material wealth is gone. In other words, brains must count, and we must be wise enough to bring

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to our aid every bit of scientific knowledge rather than be too much wedded to old-fashioned and expensive habits.

Lastly, as far as England at least is concerned, we shall still have our dense urban populations to provide for. To-day over 80 per cent. of our English population is to be found in urban areas. So long as this continues, it must exercise enormous influence upon the future of sanitation.

After the war there will be as heavy a burden as has ever been borne by Great Britain. The country will have to carry a National Debt some four times as great as it was a hundred years ago, and nearly six times greater than before the war. The normal increase of wealth will have been temporarily arrested at the same time as the National Debt has been increased by 3,000 millions or so.

At first sight it would appear that all sanitary work will have to be cut down to a minimum, only such things as are in the general view absolutely indispensable being proceeded with.

Then comes the further question: "To what extent is sanitation absolutely indispensable?"

Now it seems to me that the country generally will, after the war, aim intensely to invest both capital and labour in productive expenditure. If there has to be unproductive expenditure—and this is certain to be the case to some extent—it will be the national desire to reduce it to the lowest possible point.

We can then ask the question, Is sanitary work productive? This question has often been asked in the past, not so much perhaps by the public generally as by the individual, by the aggrieved ratepayer, who grumbles when his demand note comes in, that his money should go in such foolish directions as sanitation when he could spend it so much more profitably elsewhere.

We have made great improvements in our towns. Can we really afford the millions of pounds needful to carry out schemes of town planning and development? We have effected improvements by pulling down slums and creating open spaces in spots where formerly the people were crowded together like rabbits in a warren. It may be admitted that the conditions are not ideal, but if it becomes necessary to look at every sovereign, shall we not have to put up with a great many of these inconveniences or even with unhealthy surroundings, at least for a while longer, until the country rehabilitates itself with commercial enterprises that bring in a more immediate return?

The reply to these questions is that sanitation is in a very real sense productive work, and one of the most reproductive that a nation can devote itself to. There is urgent need to revive and enlarge all the vital forces of the nation.

After all, no matter how far we advance in commerce or in capital wealth, it is nothing but ashes and destruction if we do not at the same time grow a healthy people to partake of it.

Paris comes first amongst large towns for a low birth-rate, Berlin is fourth, whilst Hampstead and Halifax come second and third respectively. Dr. Louis C. Parkes, in a paper read to the Royal Sanitary Institute two months ago, has amplified these statistics in the light of the war. It is Russia, Roumania, and Bulgaria where the birth-rate is highest, 45 to 41 per 1,000, as compared with 28.9 in Germany, 24.4 in England and Wales, and 19.1 in France. In all the European countries the birth-rate is falling except in Bulgaria, Ireland, and Roumania, in Germany and England by 7.7 and 7 per 1,000, and in France, already notoriously small, by 4.1 respectively.

If the declining birth-rate was important before the war, how much more serious will it be after? The tendency is for it to still further decline. It is not only that much of the flower of young manhood will have been sacrificed to deaths or wounds or disease, but the womanhood of the nation, that arm of the national wealth on which our future population depends, will have been affected also.

For the healthy upbringing of the next generation good sanitary surroundings are essential. Not even does education come in front of it; they go hand in hand.

There is another factor that may be expected to enhance the value of sanitation in the future. Never has it been so called upon to play its part in war as during the last eighteen months, and the results have been almost phenomenal. Surgical and medical science have also been seen at their best, but without in any way detracting from their almost miraculous success, can it not be said that, apart from the aid of sanitary science, they would have lost much of their power?

It is not likely that the benefits thus learnt in times of stress will be lightly dropped when the nations are struggling to rebuild their shattered peoples.

Is not this, therefore, the keynote to the future? Each nation that has suffered will seek to make use of all her resources in order to retrieve her former position, and those that are wise will endeavour before all else to build up the stamina of their people, so that out of their restored energy they may restore their material wealth.

We know the British nature, born of a laudable spirit of independence, and how it dislikes being told to use its wealth in any direction of which it does not clearly see the full benefit. It claims to do what it likes with its own, and, although generous and altruistic when its inner nature is touched, it hates to be regulated. Sanitation does regulate. It imposes restrictions and burdens on the individual for the benefit of the whole body. It makes part of the community who may be well off contribute to the well-being of those whose lot is not so favourably placed. It does so because it claims that epidemics, when they come, touch rich and poor alike, because the betterment of the lowest grade of the community benefits all the grades above it.

It might be claimed that the first object of the country is to stimulate its manufactures or to develop its mineral wealth, or even to set its agriculture on a more scientific and secure basis.

All these are worthy objects, and in some form or other should be the concern of the community. Yet it is just here where brains should come in to enable us to see the real way of attaining these ends.

What, after all, are they without a healthy people to work for them and to participate in their benefits? We want the nation to flourish. Then it will be true foresight to lay out capital, lavishly, if you will, so long as it is not wasteful, in building up a strong and virile people, who shall be able to do these things.

Brains will be needed in the future, perhaps more than money, organisation more than immensity of material wealth.

The British characteristic of valuing the practical more highly than the scientific is a factor to be reckoned with in considering the future of sanitation. One of the changes many of us would like to see would be the welding together of the two, so that the practical man may be more scientific and the scientific man more practical. But it means laying aside many a cast iron tradition, and an appreciation of the value of things that do not always appear to bring in an immediate return. Sanitary engineering is one of these. It may for the moment appear a wasteful outlay; in the end it is one of the best investments that the nation could have made.

This tendency to stick to old and tried ways, and to look doubtfully at new proposals, is not unknown to sanitation itself. We have reached certain results in certain ways, and the public, after much drilling over many years, has come to regard them as orthodox. Why disturb their beliefs? Why appear to pull down and begin all over again? Because sanitation is a live science, and, being a living thing, it is bound to constantly develop and grow.

Now, what does all this amount to? We have, so far as we can see, a condition of affairs approaching when the funds formerly devoted to sanitation will be restricted, and there will certainly be a financial inducement to reduce the amount of money spent upon sanitary

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engineering. On the other hand, the need to rebuild the stamina of the peoples as rapidly and as soundly as possible will be urgent. Will the nation see that in the health, comfort, and upbuilding of its community lies the surest and most profitable return for any capital it may lay out?

There is much to be done, much that we have been urging year after year. Take our water supply. There is no question that a hydrographic survey is badly needed, so that we may properly utilise our natural resources. If, as I understand, it has been found advisable to survey the rivers and water supplies of the United States, it is much more needful in a country like Britain, that has a dense population and a limited water supply. Calls have already been made upon the rivers for commercial and industrial purposes, for which a good water supply is a vital necessity. In recent years rivers in the more isolated districts of the United Kingdom have been brought into use for power purposes. One of the latest proposals is that of a hydro-electric scheme for utilising the waters of the Shannon and the Erne in Ireland, whose submission to Parliament has only been delayed by the war. These power schemes are, of course, mere pigmies compared with the huge installations already in existence in Canada, Sweden, and other parts of the globe where water with available fall is far more plentiful than in Britain, but a return to river supplies for the purposes of power makes it the more important to see to the proper allocation of our water supplies and to a sufficient reserve being maintained for the purposes of public health.

In this connection the future should see the abolition of some of the wasteful overlapping that now exists in public water supplies. There are places where two reservoirs serving independent areas lie in close proximity, when one reservoir only would have sufficed for both districts; or where two pumping stations exist not far from one another, belonging to different authorities, and one would have been enough to supply all the needful water at far less cost, both of capital and annual maintenance.

Again, in the drainage of waste matters from the centres of population we cannot neglect proper facilities without doing damage to our national life. Want of sufficient water is only another name for famine, but want of proper drainage induces a racial poison that damages the future of the nation.

If we turn to the housing question, and consider the kind of dwelling in which the majority of our industrial population is housed, it makes, or it ought to make, us feel ashamed. Look out of the window as the train approaches one of our big cities, and note the hundreds of squalid crowded dwellings in which our workpeople, the muscle and sinew of the nation, have to live. If we merely judge the matter from the standpoint of national efficiency, it cannot pay the country to treat them thus, but from the larger point of view, that of ministering to the upbringing of a sovereign people, it is essential that these conditions should be abolished and a better standard established.

Past experience has taught us how vital roads and communications are to the effective activity of a people. The Romans knew their value, and immediately upon occupation of a province built up great communicating ways. It may be they made them for strategic purposes, but their practical effect was to enlarge the working power of the nation and to increase their efficiency manyfold.

The same truths have been proved again and again in the development of the countries of the world; and as we come to the more highly developed areas, such as those in Western Europe, roads are realised to be the very arteries of a nation, without which its activities would be strangled. Here again, therefore, if we are to get the best out of the future, it means that we must maintain and develop all kinds of roads and communications to the highest possible degree, not only our main roads (including both railways and canals), but also our smaller intercommunications and the approaches to the dwellings of the people. Here we slide insensibly from the need of economic facilities to those of public health. Roads must be clean and well kept if the health of the people living near them is to be maintained. One has only to see the way in which the roads are neglected in some foreign countries to realise that if we in England were to even approach the same degree of carelessness on account of shortage of money, we should do intense damage to the public health and make a lower standard of efficiency for the very dwelling-places themselves.

There is also a vast field of private works, covering all the sanitary amenities that the individual in his private capacity considers it needful to install. These have become so necessary to the home, whether the palace or the cottage, at any rate in such countries as Great Britain, that it is scarcely possible to conceive a modern dwelling without them. Who could imagine Marlborough College to-day as it was forty years ago, when it had only one bath for a whole house of thirty boys? Take the modern hospital; it is magnificently equipped with sanitary conveniences. These things may become more simple, but they are a necessity of civilisation so long as we have public institutions and dwelling-places in the land.

Some day the war will be over, and peace, which, after all, is the normal condition of mankind, will ensue; but in sanitation there is constant war, and it has to be waged without any intermission against the powers of disease and darkness. To do battle with these enemies is part of the function of mankind for which he was launched upon the earth and commanded to subdue it, and it is a war in which all must participate, whether rich or poor, man or woman, freeman or slave.

It is estimated by Dr. Parkes that in two years of the present war there will be dead or incapacitated out of the 325 millions population of the five chief belligerent nations no less than nine million males of military age. These, be it remembered, are the flower of the nations, upon whom the future race depends, and when to them is added the losses of fighting males in the other belligerent nations—Belgium, Italy, Serbia, Turkey, and Bulgaria—it will be seen that the reduction in vitality of Europe will be alarmingly great. We no doubt remember the statement that one effect of the Napoleonic wars a century ago upon the French nation was a permanent decrease in their average height, and this was only one sign of a damage that could not really be estimated. We in England have happily been saved from the dangers of invasion, and the human losses incurred by other nations, but where it has been the case and where the economic effect of the war has brought starvation, the losses to the civilian populations must have been intense. Dr. Parkes estimates that the total destruction of life in Europe after two years of war will amount to nearly twenty million persons.

Here, then, is ample reason why sanitation should be of all importance in the coming years. If our nation and its sister-nations are not to go down in the stress, then the sanitary engineer must play his part. There is a vast field before him. He is a Royal Engineer of the Army of Health, and it will be his privilege to help to save the nations and defeat the onslaughts of the enemy. We occupy no unworthy position. Let us rise to the greatness of our privilege, qualify ourselves, and work, that victory may be on the side of humanity, and not on that of decay and death, that our people may be re-established, our land restored.

"This precious stone set in the silver sea,
This blessed plot, this earth, this realm, this England."

THE name of Mr. Solomon J. Solomon, R.A., appears in the *London Gazette* of Wednesday last as a temporary lieutenant-colonel of the Royal Engineers.

THE Committee of French Artists has, according to the *Central News*, selected a portion of the wall surrounding the Tuileries Gardens, at the angle between the Rue de Rivoli and the Place de la Concorde, as the site upon which will be placed a bas-relief memorial to Nurse Cavell.

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THE BUILDER'S POINT OF VIEW.*

(Concluded from last week.)

I DO NOT suppose there are many bills of quantities but include somewhere or other the words, "Do all cutting, making good, &c., &c., for all trades, including specialists." On the face of it, this seems a simple proposition, but as a matter of fact it has of late years become the most unruly and unmanageable infant any unfortunate man was ever asked to hold. Several attempts (more or less successful) have been made to put this on a fair and businesslike footing, and perhaps the best, and one of which I have had practical experience, was as follows:—

All branch tradesmen and specialists were required to provide and include in their tender for all cutting away, reinstatement, making good, &c., in all trades that would be required by them in the execution and maintenance of their contract; such cutting away, &c., to be done in an efficient and satisfactory manner by workmen skilled in the various trades in which such cutting and making good was required, and at the cost of the trader or specialist for whose benefit such cutting and making good, &c., had been done. In default the architect had the power to employ other workmen to carry out the work and to charge the cost of so doing against the offenders. I am pleased to say the exercise of this power was attended with most satisfactory results. I am of opinion, gentlemen, that the liability for cutting away, making good, &c., should be as much as possible placed upon the shoulders of the specialist or branch tradesman, seeing that it rests with him by good management to reduce this to a minimum, or by bad management to increase it to a very serious quantity. As an alternative I suggest that a provisional amount to cover the cost of such cutting, &c., be included in quantities, that such work be carried out in a proper and efficient manner by skilled workmen as required, for which weekly vouchers of time and materials would be submitted.

In issuing certificates, much unpleasantness to the builder could be avoided if such certificates clearly stated in detail the various amounts included for each specialist and branch trade.

I will now turn to another matter. Sometimes there is a certain amount of delay in the issue and honouring of certificates. This may or may not be avoidable, but where there is delay it is invariably the builder who suffers in consequence. Suppose, for instance, we take a job of £10,000 that has to be completed in twelve months. This roughly means £200 of work per week. When the amount of work executed amounts to £1,000, the builder applies for a certificate, and in due course is granted one for, say, £800; this he presents to the building owner, and sooner or later he receives a cheque in discharge. It often happens that some weeks elapse between the date on which he makes application for a certificate and the date he receives payment from the building owner. In the meantime, he has been proceeding with the work, and has perhaps expended another £800 or £1,000 on the job before the first certificate is honoured. If this procedure is repeated, it may easily mean that in addition to the retention money there is a floating balance of anything up to £1,000 or so due to the builder practically the whole time the work is in progress. This is a difficult matter to overcome, but I suggest that where a builder can show that the building owner is not honouring the certificates as promptly as he might reasonably be expected to do, the architect should take this into consideration and be rather more liberal in the amount and frequency of his certificates. For some reason or other the financial position of the builder appears to be ignored by both architect and building owner; needless to say, resulting financial arrangements eat up a considerable proportion of the builder's profits.

It appears to me to be quite wrong that a builder should be put into the position of arguing with himself whether he dare, for policy's sake, bring pressure to bear upon the architect to issue certificates and to see that they are met.

Before leaving the question of certificates and payments, I should like to consider briefly the date of completion, final certificate, and retention money.

It has always appeared as if date of completion was a very elastic matter, which could be construed by the various parties concerned in a widely different manner. I have known cases where the building owner has been in occupation of the premises for weeks, and contended that inasmuch as several very small jobs were not quite finished off the contract was not complete. I feel sure you will agree with me this is wrong, and that when a builder has in the broad sense completed the work he originally contracted for, that should be taken as the date of completion, and the period of maintenance should commence on that date.

It is very desirable all day or deviation sheets should be submitted by the builder weekly, and that such sheets should be dealt with promptly (and as they arrive) by the architect or surveyor. At present they are often held over until completion, and not only does this entail the loss of a considerable amount of time in dealing with them, but the value of the work they represent is not always taken into consideration when interim certificates are issued.

There is a general feeling amongst builders that the present practice of holding large amounts as retention money without any allowance being made to the builder for bank interest is not reasonable. If a building owner is to have the benefit of such an amount of money during the period of retention he should, in all fairness, be called upon to pay a reasonable rate of interest. It is also felt that in many cases the *period* of retention is too long.

We will now consider the question of specifications.

When tendering for or carrying out a job the builder turns to the specifications for guidance on the nature of the work and materials required. If these specifications are explicit and up-to-date they are of very real assistance to him, both in the compilation of his tender and the execution of the work.

It sometimes happens, however, that ambiguous and obsolete clauses find their way into the specifications with results most unsatisfactory to all concerned, and especially does this apply to clauses dealing with the description of timber.

Take, for example, the clause often met with in present day specifications, which directs that "the timber shall be of the best middling Memel, Dantzic, or Riga fir, &c."

Here we have a clause which, for reasons I will give later, is hopelessly out-of-date.

If a builder, when estimating for a job, calls at the architect's office for the purpose of inspecting drawings and clearing up any points that have cropped up on his perusal of quantities, &c., makes inquiry as to what is intended by "best middling Memel, Dantzic, &c.," the usual explanation is that the intention is to specify the use of the timber known locally as red deal, this being the timber most extensively used in good quality building work for both carpentry and joinery.

Red deal, also known as red fir, Scotch fir, Baltic fir, and commonly called yellow deal in the south of England, is—to be exact—neither a deal nor a fir, but is the wood of a pine tree (Pinus sylvestris), which is found principally in Russia, Sweden, Norway, and Germany. There is also a relatively small quantity grown in the United Kingdom.

At one time, say up to twenty-five or thirty years ago, enormous quantities of red deal were imported into this country from Memel, Dantzic, and Riga, generally in the form of roughly-squared logs of large dimensions. The best qualities of these—known as "best middling Memel, Dantzic, or Riga"—were invariably of well-

* Paper read before the Manchester Society of Architects.

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grown and mature timber, clean and sound, of beautiful texture, and excellent in every way. These logs were often cut up and converted by the builder, each log being dealt with on its merits, and when a builder took care to hold a sufficient stock of logs it was very rarely indeed he had trouble over the question of sap or other defects.

In country districts most of the conversion of logs was by means of pit-sawing. And very earnest indeed were the discussions and consultations which sometimes took place between the builder, his foreman, and the top sawyer as to the best method of converting some exceptional log.

For the last twenty-five or thirty years, however, the imports from East Prussia, either through the depletion of the available and accessible forests, the action of the Government, or the competition of Russia and Scandinavia, have steadily decreased, with the result that at the present time, with the exception of a few small consignments generally inferior in quality and size, Memel and Dantzic fir timber may, for all practical purposes, be considered as unobtainable. So that for our present supplies of red deal we now have to look to Russia (including Finland), Sweden, and Norway.

So far as the latter country is concerned, the lack of a reasonable proportion of good-sized mature trees prevents her supplying sawn timber of the size and quality required in good class contract work, the principal Norwegian timber exports taking the form of battens, scantlings, planed goods, poles, bickers, &c. The red deal from the Riga district, being mostly coarse and of inferior texture, cannot generally speaking be considered suitable for good-class work.

In speaking of red deal, it will be found that, broadly, it can be divided into groups, each group having different characteristics, as for instance:—

The timber from the Archangel district is mild in texture, sound, free-working, and in the best qualities is eminently suitable for joinery and mouldings of the highest class, while the lower qualities yield really good carcassing timber.

From the Petrograd district the timber is large and of a stronger and tougher nature than Archangel; it is very durable and suitable in every way for carpentry and outside work of all kinds. In the higher qualities—if properly seasoned—it is a good joiners' wood.

From Sweden is obtained in the higher qualities some exceedingly good joiners' deals, sound, very free from knots, of good uniform texture, but with rather more sap than the best Archangel shipments, while the lower qualities provide us with sound, good carpentry deals.

From Finland a large amount of the timber exported is of smallish dimensions and medium quality, but there are, of course, exceptions, as in the case of the Kemi district at the north end of the Gulf of Bothnia, from whence we receive an exceedingly good carcassing deal, sound, bright and dense. Again in Bjorneborg district there are shippers who, by reason of careful selection and grading, have succeeded in exporting timber of the very best quality, the higher grades being really good joiners' deals and the lower ones good, sound carcassing wood.

Siberian redwood is now coming into the market, but of this I prefer not to express too decided an opinion without further acquaintance. From what I have seen of this timber it would appear that the vast forests of this district will prove an excellent source of supply for many years to come, providing they are systematically exploited.

In practice it will be found no one district has a monopoly of any particular quality or characteristic; also that any shipment is liable to vary greatly in quality, &c., from time to time, so that a builder needs to keep a very sharp look-out if he is to be accurately posted and up to date in his information.

Great changes have taken place during the last twenty-five or thirty years, but perhaps the one which most generally affects the building timbers used in this country is the rapid development of the sawmilling industry in the exporting countries, as a result of which practically the whole of the red deal for builders' use is imported in the form of deals, battens, scantlings, boards or strips, instead of logs as heretofore. These range in size from ½ in. by 1 in. up to 4 in. by 12 in., but there is comparatively little of the latter dimension available. Now it should be possible to obtain within the range of these two dimensions practically any size of timber that can be required for carcassing work, and if it happens that objection be taken to the smaller sizes of scantlings on the ground they are not of mature wood, it is very easy to select a batten or deal size that with one or more flat cuts will yield two or more pieces of the required dimensions and without waste.

For instance, suppose there is an objection to 2 in. by 3 in. as imported, then a 2 in. by 6 in. or a 3 in. by 4 in. cut down the centre will yield two scantlings of 2 in by 3 in., and so on.

It may be, however, that an architect considers it desirable to specify that certain of his carcassing timbers shall be of special dimensions such as, say, 2¼ in. × 6½ in. with 2¾ in. × 6½ in. for trimmers, &c.

Now so long as he clearly understands that the use of these dimensions means that 2¼ in. × 6½ in. will cost the same as 2½ in. × 7 in., and 2¾ in. × 6½ in. the same as 3 in. × 7 in. plus the cost of labour and sawing in each case then no one has cause for complaint; always provided that the specifications and the bills of quantities clearly instruct the builder as to the exact dimensions of the various sections of timber required together with the quantity of each dimension.

Perhaps the best method of doing this is the one adopted in certain districts where the quantities of the timber required for carcassing, &c., are given in cubic feet; lintels, floors, roofs, ceilings, partitions, &c., being kept separate; the whole being accompanied by a specified schedule giving in detail the dimensions of the different sections and the quantity in lineal feet of each section.

Seeing that for all practical purposes the largest size of sawn red deal imported is 4 × 11 with a very limited supply of 4 × 12, though a certain amount of Quebec Red Pine (Pinus resinosa) is imported in 5 in. and 6 in. flitches and generally used and passed without comment, it may be asked what is to be done when timber of larger size is required?

If expense is no object and red deal is specially desired then the builder will have to look round and purchase such special logs as he is able to obtain and convert them as required.

But suppose expense *is* a consideration then it will be found necessary to fall back on some other timber as a substitute such as Quebec Red Pine, Pitch Pine, Oregon Pine, British Columbian Pine.

Having now dealt with the source of origin and the dimension of red deal, we will consider the specification as to quality.

This generally is covered by a clause requiring the timber to be free from sap, shakes, large loose and dead knots, and all other defects. So universal is the use of this clause that we find it embodied in specifications for all manner of jobs ranging from the villa costing £500 to the mansion, cathedral or national building costing anything from £50,000 up.

Now if the building owner really desires to have timber of this superlative degree of excellence and is prepared to pay the enormous charges its use will entail, then the problem is comparatively simple for the builder, who merely requires to interpret the specification literally and provide in his estimate for the *use* of such timber, and for the *rejection* of all that does not approach the required standard.

But suppose the building owner does not require, or is not prepared to pay, for such high-class materials—and this latter obtains in quite 95 per cent. of contracts—then such a clause is misleading and only causes misunderstanding and disputes. The builder, acting on precedent, and in perfect good faith, quotes for and uses

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a reasonably sound article similar to what he has previously used with satisfactory results on similar jobs. The job proceeds and some question arises as to the quality of the timber. The specification is produced, and, of course, is found to clearly require the timber to be free from sap, &c.

The architect says, "In the interests of my client and my reputation I must reject this timber because it does not strictly comply with the specification."

While the builder replies, "Though it is not perhaps free from sap, &c., it is as good a quality as you have a reasonable right to expect, bearing in mind the nature of the job, and the fact the timber is equal to what I have used on similar jobs for you." Further, if the various builders, when tendering for the job, had priced it on a literal interpretation of the specification, the amount of the tender would have been so prohibitive that your client would have said, "I won't pay this amount, which is altogether too high. So and so's job, which is something like what I require, only cost so much. How is it my job is so much more? The price must be cut down. I'm not building a cathedral, &c."

All this trouble and bother could be avoided by the use of a series of carefully drafted and up-to-date clauses each dealing with the different quality of work, as for instance:—

No. 1, which would deal with the mansion, cathedral, or other job where absolute perfection was essential and expense no object.

No. 2 would provide for a really good job where the question of expense had to be considered to a certain extent.

No. 3, which would specify a good quality job, but one where expense was a real consideration.

And so on.

The drafting of a series of clauses on these lines and their periodical revision in order to keep them up-to-date should not be a very difficult matter for a small joint committee, composed of, say, a few members of the R.I.B.A. and the Master Builders' Association, with one or two timber importers added. And the sooner such a committee is appointed and gets to work the better it will be for all parties.

There is no doubt that from a variety of causes, over which we in this country have no control, the prices of timber have steadily increased and will continue to do so, while at the same time the quality has gone down, with every indication of still further deterioration. Personally, I don't think the timber famine we occasionally hear of is likely to materialise, but it is certain we must prepare for a steady increase in price, with a certain depreciation in quality, and, whether we like it or not, this is a situation we shall be compelled to accept.

While some of this deterioration is due to a shortage of mature and well-grown trees in the accessible forests, a certain amount is caused by the enormous development of the saw-milling industry in the countries of origin. This I have dealt with earlier, but only as it affected dimensions. I will now deal briefly with its effect on quality.

The trees, after being cut down and trimmed in the forest, are run down to the ponds adjoining the mills, and while floating are sorted into sizes, then they are taken into the mill, sawn to dimensions, sorted, branded, and stacked for seasoning and export, the high-class shipments being carefully graded into three or more qualities, the prices of which vary considerably. As an instance of this take the following prices, which were actually paid for red deals in 1914:—

	1st	2nd	3rd	4th
4 in. by 9 in.	£25 0 0	£20	£15	(£12 5*s*. 4 in. by 11 in.)
2 in. by 8 in.	17 10 0	12	—	—

This means a difference in cost of quite 40 per cent. between first and third deals of the same dimension (4 in. by 9 in.), and is due solely to the difference in quality. At the same time it shows that deals of the same quality, but of different dimensions (4 in. by 9 in. and 2 in. by 8 in.), vary 40 per cent. in cost, solely on account of the difference in size.

It would, therefore, appear the best paying policy for the shipper to adopt is to turn out as many large sized, high-priced deals as he can, and we may depend upon it he is quite alive to the advisability of pursuing this policy.

Now, though he wants to turn out as large a proportion of high-priced deals as he possibly can, he must maintain a reasonably good standard of quality or his sales will decrease, and he will suffer in reputation and pocket.

It may be taken for granted he is quite aware of this, and, in consequence, the best shipments are graded on fair and equitable lines, but for all this it will be found that timber, even of first quality and of the best shipments, does not literally comply with a clause requiring it to be free from sap, shakes, &c.; such timber will certainly be free from large, loose and dead knots, shakes, heart-centres and discoloured sap, but practically every deal in the parcel will have a certain quantity of *bright* sap on one or both edges.

The difficulty here is that the shipper and importer both flatly refuse to admit for an instant that the presence of a certain amount of bright sap on an otherwise sound deal is a defect.

The builder says, "I want some 3 in. by 8 in. best red deal absolutely free from sap, &c. What is your price?" The importer says, "I have none. It can't be done, but if your client really requires such a superfine article and has plenty of money to burn, I suggest you have some 4 in. by 9 in. or 3 in. by 11 in. first quality. These you can cart to your mill, select the best of the deals, and cut them down to your dimensions by sawing off the outside slabs, which you may be able to find a use for. Thus you will get rid of the sap which your client objects to." He then produces his order book and proceeds in this strain: "How many standards shall I book you? We have a real fine parcel of 4 in. by 9 in. first appanage just arrived, bright, sound, good lengths, and in prime condition. I will take £25 for them. What? Nothing doing? Look here, have a five-standard lot loaded direct on truck, and I will take 5*s*. less. What do you say?"

What can the builder say? This, gentlemen, is the exact position that has to be faced when a builder is on the look-out for timber free from sap, &c.

I must admit the shipper is quite justified in his attitude, looking at the question from his point of view. Why should he go to all this trouble and fuss? His shipment is perhaps recognised as one of the very best in the market; his goods command a ready sale at top prices; each deal is honestly what it professes to be. Why, then, should he alter his methods of conversion and grading?

There are hundreds of shippers each exporting several qualities. Some of these shippers make a very clear and distinct grading into first, second, third, and so on. A few even have an "extra first," and then follow on with first, second, &c. Some call their goods "unsorted," and let it go at that. So that it would appear this question is much too complicated to be properly dealt with in the scope of this paper.

It should, however, be clearly understood the term third or fourth quality does not imply the timber so designated is so poor in quality as to be unsuitable for use in good-class buildings. On the contrary, it will be found these qualities in a good shipment contain a very large proportion of really good carcassing timber.

Suppose we consider the best shipments from, say, the Archangel or Gefle districts. We shall find generally those of

First quality are clean, sound deals, with a certain amount of bright sap on one or both edges, and excellent for joinery.

Second quality are a little coarser than first, but, all the same, good joiner's timber.

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Third quality, good bright carcassing timber, coarser than seconds, and with a certain quantity of heart centres.

Fourth quality, coarser than thirds, Gefle being perhaps rather freer from shakes than Archangel.

There is a certain amount of variation in the timber and in builders' opinions respecting same. Some prefer Archangel for all purposes, others choose Swedish goods, while some prefer best Archangel or Swedish for their joinery and Petrograd, Finnish or Swedish for carcassing. But in no case do these timbers as imported comply with the drastic specification now in common use.

Now though I have confined myself principally to red deal, my remarks apply equally to most of the other building timbers, and everything seems to indicate the future has in store for us an increased development in the sawing and machining industry at the ports of origin, with prices on the up grade and quality on the down grade, and we may as well face the situation boldly and frankly, as nothing but trouble can ensue if we continue to refuse to acknowledge facts.

Now, gentlemen, I have said as much, I think, as our time permits. I feel very anxious as to the impression which my remarks have left on your mind; as for myself I feel more than ever the difficult nature of the problem you as architects and we as builders have to meet. Although any suggestions I can make in relation to simplifying the problem must of necessity be very tentative—I might almost say risky—I am nevertheless strongly tempted to say a few words under this head.

You will have gathered in what a difficult position the builder is placed, and I myself fully recognise the difficulties on your part—difficulties which lead to a want of mutual understanding even though both sides may be acting in perfect good faith and with a desire to serve the best interests of their common employer.

As I am the sole representative here of one side or interest, it is with some diffidence I suggest that a strong committee formed of architects and builders, with perhaps an accountant, might be able to draw up some scheme which would be an improvement on the present system.

For instance, it is possible that arrangements might be made by which the bonus system could be brought into a practical form. Or, again, the system of carrying out jobs on commission—graduated or otherwise—might be considered and dealt with.

With regard to the latter system I have during the last few years had practical experience of this, as nearly one-half of the business transacted by my firm during that period was on a commission basis. The jobs ranged in size from £500 to upwards of £15,000, and in each and every case the results were satisfactory to all parties concerned.

R.I.B.A. EXAMINATIONS.

Preliminary:—The Preliminary Examination, qualifying for registration as Probationer R.I.B.A., was held in London and Manchester on November 23 and 28, 1915. Of the thirty candidates admitted, seventeen were exempted from sitting, and the remaining thirteen were examined, with the following results:—

	Number Examined	Passed	Relegated
London	8	6	2
Manchester	5	4	1
	13	10	3

The passed and exempted candidates—numbering altogether twenty-seven—have been registered as Probationers.

Intermediate:—The Intermediate Examination, qualifying for registration as Student R.I.B.A., was held in London and Manchester from November 19 to 26. Fourteen candidates were examined, with the following results:—

	Number Examined	Passed	Relegated
London	9	4	5
Manchester	5	3	2
	14	7	7

Exemptions from the Intermediate:—The following Probationers, having produced satisfactory evidence of their training and qualifications, were exempted from sitting for the Intermediate Examination, and have been registered as Students:—

Henriques: Elias Cosmas [*P.* 1915]; c/o Architectural Association, 18 Tufton Street, Westminster, S.W. [Bombay School of Architecture.]

Hutton: Lorne De Hutton [*P.* 1915]; c/o Architectural Association, 18 Tufton Street, Westminster, S.W. [Dunedin School of Art and Design.]

In accordance with the special concession granted by the Council to Probationers serving with the Forces who are eligible for the Intermediate Examination and whose Testimonies of Study have been approved, the following were also exempted:—

Ashworth: James Rothwell [*P.* 1910]; 2 Broad Oak, Accrington. (Lieut. 5th Bn. East Lancs. Regiment.)

Bell: Edgar Allen [*P.* 1913]; 31 Hanover Square, Leeds. (Corporal, York Hussars.)

Couchman: Harold William [*P.* 1913]; Mount Pleasant House, Mount Pleasant Road, Tottenham. (153rd Battery, Royal Garrison Artillery.)

Dryden: Thomas Archibald [*P.* 1908]; Cloverley, Eversley Road, Sketty, Glam. (University of London O.T.C.)

Gaskell: Reginald Robinson [*P.* 1904]; Albert Chambers, 11 Carr Lane, Hull. (1/1 East Riding Field Company, Royal Engineers.)

Greensill: George Edward Augustus [*P.* 1913]; Allport Road, Cannock, Staffs. (Birmingham City Bn., Royal Warwick Regiment.)

Grummant: Reginal Thomas [*P.* 1914]; 27 Raul Road, Hanover Park, Peckham, S.E. (Artists' Rifles.)

Hector: Alexander Ogilvie [*P.* 1906]; "Pinehurst," Tilford, near Farnham, Surrey. (Corporal, Princess Patricia's Canadian Light Infantry.)

Jones: Harold [*P.* 1914]; School House, Wingrave, nr. Aylesbury, Bucks. (19th Bn., Royal Fusiliers.)

Lee: Stanley [*P.* 1912]; 14 Ash Grove, Newland, Hull. (Royal Garrison Artillery.)

Lumb: Joseph Haydn [*P.* 1912]; 1 Whitby Avenue, Heworth, York. (1/6 2nd London, Royal Engineers.)

Morgan: Taliesin Merfyn [*P.* 1913]; "Telynfa," Aberdare. (Inns of Court O.T.C.)

Norris: William George [*P.* 1910]; 9 Caversham Road, Kentish Town, N.W. (68th Coy., Army Ordnance Corps.)

Palmer: Kenneth [*P.* 1913]; 7 Beech Range, Levenshulme, Manchester. (Royal Army Medical Corps.)

Paxton: Norval Rowallan [*P.* 1912]; 208 Ledard Road, Langside, Glasgow. (Glasgow University O.T.C.)

Prosser: Donald Sydney [*P.* 1913]; "Heathfield," Llanishen, nr. Cardiff. (Inns of Court O.T.C.)

Richards: Archibald Ivor [*P.* 1907]; 220 Broomwood Road, Clapham Common, S.W. (Inns of Court O.T.C.)

St. Leger: Charles Douglas [*P.* 1914]; Fort Purbrook, Cosham, Hants. (2nd Lieut. 13th Hampshire Regiment.)

Shipley: Ralph Reginald [*P.* 1910]; 11 Woodbine Terrace, Gateshead-on-Tyne. (2nd Lieut., 63rd Northumbrian Division, Royal Engineers.)

Smith: Charles William [*P.* 1912]; Central Y.M.C.A., Tottenham Court Road, W. (Artists' Rifles.)

Thirtle: Tom Owen [*P.* 1908]; 35 Sheepcote Road, Harrow. (Royal Army Medical Corps.)

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Williams: Leo John [*P.* 1912]; Branksome, Mennaye, Penzance. (2nd Lieut., 2/5 Bn. Duke of Cornwall's Light Infantry.)

Final and Special:—The Final and Special Examinations, qualifying for candidature as Associate R.I.B.A., were held in London from December 2 to 10. Of the twenty-nine candidates admitted to the Examination ten passed, and the remaining nineteen were relegated in various subjects. The successful candidates are as follows:—

Cheek: Cyril Cliff [*S.* 1912]; 36 Crockerton Road, Wandsworth Common.

Colbeck: Henry [*S.* 1909]; 26 Bramley Road, Ealing, W.

Gale: Charles Henry [*Special*]; 31 Kersland Street, Hillhead, Glasgow.

Hamilton: Andrew Blayney [*S.* 1914]; Bloomsbury Club, Cartwright Gardens, W.C.

Hill: Claude Edgar [*S.* 1911]; 35 Collegiate Crescent, Sheffield.

Hull: James Vincent [*S.* 1913]; "Lofthouse," near Garstang, Lancs.

Picton: Clarence Spencer [*S.* 1913]; 73 St. Donatt's Road, New Cross, S.E.

Rainger: Herbert P. [*Special*]; Lloyd's Bank Chambers, Cheltenham.

Rough: James Wilfred [*Special*]; c/o New Zealand High Commissioner, 13 Victoria Street, S.W.

Vinden: Gilbert [*S.* 1912]; 57 Eastern Avenue, Reading.

The number of failures in each subject of the Final Examination was as follows:—

A. Design	8
B. Construction—	
(1) Foundations, Walls, Roofs, &c. ..	12
(2) Iron and Steel	14
C. Hygiene	11
D. Properties and Uses of Building Materials	6
E. The Ordinary Practice of Architecture ..	11
F. The Thesis	2

The Ashpitel Prize, 1915:—On the recommendation of the Board of Architectural Education, the Council have awarded the Ashpitel Prize for 1915 to Mr. Percy Joyce Adams, of "Fairmead," Woodside Road, Woodford, Essex [*Probationer* 1906, *Student* 1911, passed the Final Examination July 1915], he being the candidate who has most highly distinguished himself in the Final Examinations held in 1915.

R.I.B.A. WAR RECORD.

A RECORD is being kept at the Institute of the names of all members of the architectural profession who have joined the military or naval forces of the Crown for the period of the war. The list includes practising architects, their assistants and pupils, and architectural teachers and students, whether attached or not to the R.I.B.A. or other architectural body. So far, some 2,100 names have been entered on the Record, but lately, in spite of the recent boom in recruiting, very few names have been received other than those of members of the Institute. The co-operation of members and non-members is specially invited, in order to make the Record known and to bring about its completeness. Names, with rank and regiment where possible, should be sent to The Editor, "Journal R.I.B.A.," 9 Conduit Street, W.

AT a meeting of the congregation of Malvern Priory Church, the Vicar (the Rev. A. Linzee Giles) presented a report on the condition of the fifteenth-century glass in the Priory windows. The Vicar said men had arrived to deal with the east window, which he was convinced would have been blown out during the recent gales if the wind had been in the east. The three windows in the north choir clerestory also needed immediate attention. The work in connection with the east window would cost about £400, and that in connection with the three north clerestory windows about £330.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

St. Mogue or Aidan (first Bishop Ferns, A.D. 598, Feast Day, January 31), and Irish Art and Antiquities.

He (St. Patrick) built a Christian temple in a lovely
Crannoge Isle,
And piety and learning shed around their choicest smile,
For St. Aidan here was nurtured, and a seat of learning
blest,
The race and land of Tullyhaw, a beacon in the West.
Unpublished poem by the late Rev. R. Leech.

SIR,—Among the galaxy of Hiberno-Keltic Saints, the name of St. Mogue or Aidan holds a prominent place. He was born on the Island of Inch or Inis Breachmuigh, in Templeport lake, near Ballymagauran, parish of Templeport, Tullyhaw, co. Cavan, about the middle of the sixth century. His father Ethna was ninth in descent from Colla Uias, king of island, A.D. 336. The saint's name signifies "fire," and before he was born a fiery star hovered at night above the home of his parents. Ethna interviewed a seer gifted with prophesy to account for the omen. The sage said, "As a star led the Wise Men to worship Christ, and by the same star it is thereon that a Son shall be born to you, full of the fire of the Holy Ghost." St. Mogue's holy life fully bore out the correctness of same. He was for several years in the monastery of Clonard before taking up his abode with St. David of Wales, and subsequently returned to Ireland, where he was the means of building numerous churches and monasteries.

A legend records that on a certain occasion St. Mogue was about to erect a church, but could not obtain the services of an architect, and placing his trust in God, he blessed a gentleman named Gobhan, who became gifted with the talents and professional training of a high-class architect, and supervised its erection in an able manner. The said monasteries became seats of learning, to which the youths of Britain and the Continent flocked to get educated. The "Monastic Scriptorium" formed an important part of their construction and routine, wherein choice illuminated MSS. were prepared.

Professor E. C. Quiggan, University of Cambridge, is exercising his abilities in unearthing and translating some of the old bardic poems of Banba.

In vol. 5 of the Proceedings of the "British Academy" for A.D. 1911, under "Prolegomena to the study of the later Irish Bards, 1200-1500," he states that the earliest collection of family poems now in existence is probably the "Book of the McGoverns or MacGaurans," a fourteenth-century vellum in the possession of the O'Conor Don. The erudite professor says in an addenda that one stanza affords the only literary evidence with which he was acquainted, that the better known families maintained books in which eulogies of their race were entered, and that the "Magauran Book" was transcribed for Thomas Maguran (Ris Tuatha, Tribe King), who died A.D. 1343, according to the "Four Masters," by Adian O'Cianan. Professor Quiggan intends to publish the whole of the MS., but will visit the locus-in-quo again to familiarise himself with the topography of the barony. The McGoverns were the hereditary custodians of the iron bell of St. Mogue and its shrine, which are in the custody of the Anglican Primate of Armagh (see Proc. of Antiquaries, London, June 15, 1865). St. Laoerein, an early friend of Saint, presented him with a most exquisitely wrought bronze figured shrine, containing the relics of the holy martyrs, SS. Peter and Paul, and also those of SS. Clement, Lawrence, and Stephen, and mementoes of the Blessed Virgin. The Breac. Moedog, or speckled shrine, is very like the chasses or shrines of Limoges, but of much later date. Miss M. Stokes conjectures in her "Observations" on the subject, vol. 43, "Archæogine" (London Society of Antiquaries), that it is not improbable that the form of an early church or oratory was intended to be reproduced by these early shrines (see also "Shrines of British Saints"), in both of which works the architec-

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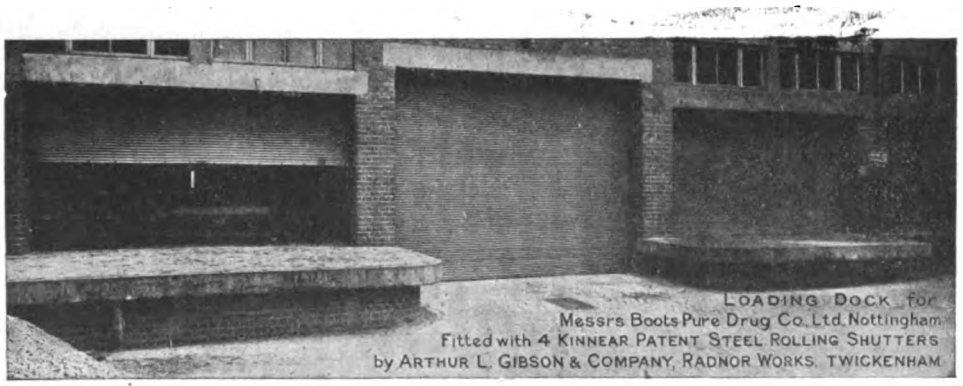
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tural student will find much to interest him in Irish ornamentation, birds, &c.—Yours, &c.,

J. H. McGOVERN,

Liverpool: January 25, 1916. Licentiate R.I.B.A.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BEDFORDSHIRE.

Bedford.—House, Kimbolton Road, for Mr. R. Atkins.
House, Putnoe, for Mr. A. Prosser.

BUCKINGHAMSHIRE.

Bletchley.—Garage, High Street, for Mr. Jacobs.

CHESHIRE.

Nantwich.—W.M. Chapel, Dodd's Green (£600).

DEVON.

Paignton.—Isolation Hospital: extension.

LANCASHIRE.

Clitheroe.—The Chatburn Day School: extensions.
Fleetwood.—Wesleyan Church, Elm Street: proposed extensions.
Irlam.—Seventy-eight Council houses. Mr. R. H. Winterbottom, Council surveyor.
Manchester.—Additions to Nook Mill, for Messrs. Bright Brothers.
Rochdale.—The Alexandra Hotel, Bradshaw Street: alterations, for Messrs. Walton & Co.
Walkden.—Technical School: extensions. Mr. H. Littler, county architect, 16 Ribblesdale Place, Preston.

NORTHUMBERLAND.

Wallsend.—Bakery, Back Laurel Street, for Mr. R. L. Blackburn.

NOTTINGHAMSHIRE.

Basford.—Factory, Colwick, for the British Vulcanite Industrial Company.

OXFORDSHIRE.

Oxford.—Business premises, Queen and New Inn Hall Streets. Mr. H. Quinton, architect, 22 George Street.

SUFFOLK.

Hartest Green.—House and shop. Mr. John Honeywood, architect.

SURREY.

Cobham.—The "Black Swan" p.h.: additions and alterations, for the Cobham United Breweries, Ltd.

SUSSEX.

Bexhill.—Isolation Hospital: extension.

WARWICKSHIRE.

Coventry.—Additions to bakery, &c., Argyll Street, for Mr. W. Lissaman.
Extensions, Foleshill Road, for S. Courtauld, Ltd.
Additional transformer chamber, &c., Northey Road, for Messrs. Webster & Bennett, Ltd.
Electric Theatre, Foleshill Road: additions, for Mr. W. J. Henderson.
Factory, French Road, for the Nero Engine Company, Ltd.
The "Old Crow in the Oak" p.h., Lockhurst Lane: rebuilding, for Phillips & Marriott, Ltd.
Two houses, stabling, &c., Clay Lane, for Mr. H. J. Emery.
Eight houses, Queensland Avenue, for Mr. C. E. Needham.
Six houses, Queensland Avenue, for Messrs. Osborne & Co.

YORKSHIRE.

Batley.—Hospital: extension (£4,000). Mr. A. W. Hanstock, architect, Branch Road.
Churwell.—Millshaw Leather Works: extensions. Mr. T. A. Buttery, architect, 1 Basinghall Square, Leeds (and Albert Exchange Buildings, Queen Street, Morley).
Keighley.—Keighley and Bingley Joint Hospital: proposed enlargement, &c.
Ossett.—Conversion of cottages, Spa Lane, into a warehouse, for Messrs. Fawcett & Co.
House, off Manor Road, for Mr. A. F. Peace.

WALES.

Aberayron.—Shop and stores, Cottage Cross Roads, Llandyssiliogogo, for Mr. Thomas Jenkins (of Llainfran).
Cardiff.—King Edward VII. Hospital: extension (£46,500). Mr. E. M. B. Vaughan, F.R.I.B.A., architect, 21 Dumfries Place.
Sanatorium, Canton: additions and alterations. City engineer.
Rhyl.—Proposed military hospital.

SCOTLAND.

Aberdeen.—Two houses, Orchard Street. Messrs. J. Shirras & Son, builders.
Works, King Street Place: addition, for Messrs. J. M. Henderson & Co.
Works, Hutcheson Street: addition, for the Aberdeen Comb Works Company, Ltd.
Bo'ness.—Electricity Works (£9,000), for the National Electric Construction Company, Ltd., London.
Dundee.—Harris Academy: additions (£20,000). Mr. W. B. D. Keith, architect, 10 Whitehall Street.
Edinburgh.—Power station, Portobello, for the T.C.
Greenock.—One hundred and two workmen's cottages, Craigieknowes (£35,000).
Sugar Store, Princes Street, for Messrs. John Walker & Co.

IRELAND.

Ballycarry.—Masonic Hall.
Belfast.—The Queen's University: enlargement of the bacteriological laboratory. Mr. R. M. Close, M.R.I.A.I., architect, Donegall Square North.
Cootehill (Co. Cavan).—Catholic Church.
Dublin.—Proposed Council cottages (£10,000).
Fermanagh Co.—Industrial Hall: proposed central dispensary (£700).
Westport.—Garage and workshops, Mill Street. Mr. Ritchie, architect.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 22,992. May 19, 1915.—John Brown, 31 Wellgate, Dundee. Device for preventing the shaking of window sashes.

24,721. Dec. 29, 1914.—Louis Rose, Madras Street, Christchurch, Canterbury, New Zealand. Windows.

145. Jan. 4, 1915.—William Calway, 1 Hartington Park, Bristol. Pavement kerbs and gutter channels.

1,904. Feb. 6, 1915.—Thos. Richardson, 7 Foxham Road, Tufnell Park, N. An adaptable fire front to replace bars of register grates and the like.

2,363. Feb. 15, 1915.—H. M. Pritchard, architect, 11 Dumfries Place, Cardiff. Building construction.

4,001. March 13, 1915.—Unit Engineering Company, Ltd., and Colin Mather, jun., 45 Victoria Buildings, Victoria Street, Manchester. Water and like heaters and automatic controlling apparatus therefor.

5,129. April 3, 1915.—H. C. Wood, 5 Bromfield Terrace, Tadcaster, and W. H. Brook, Bilborough, near York. Gully traps.

10,356. July 16, 1915.—William Story, 15 Chapeltown Road, Leeds, York. Glazing roofs and like structures.

10,384. July 16, 1915.—Moritz Kahn, Caxton House, Westminster, S.W. Metal fabrics for use in ferro-concrete construction.

12,235. Aug. 25, 1915.—W. H. Partridge, 63 Charterhouse Street, E.C. Hinges for cold-storage doors.

3,261. March 1, 1915.—L. A. Maurice, Foley Cottage, Claygate, Surrey, and F. T. Cash, 67 Queen Victoria Street, E.C. Electric-light fittings.

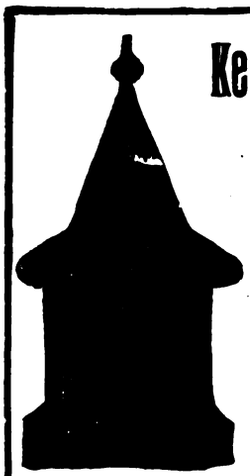
13,612. Sept. 24, 1915.—The Pennsylvania Wire Glass Company, 915 Pennsylvania Building, Philadelphia, U.S.A. Reinforced sheet glass.

Any of the above specifications may be obtained from J. D. Roots & Co.

MR. E. H. L. DEANE, Local Government Board Inspector, held an inquiry on the 20th inst. at the Board-room of the South Dublin Union into an application by the South Dublin Rural District Council for sanction to a supplemental loan of £10,000 for cottages in connection with the Labourers' Acts.

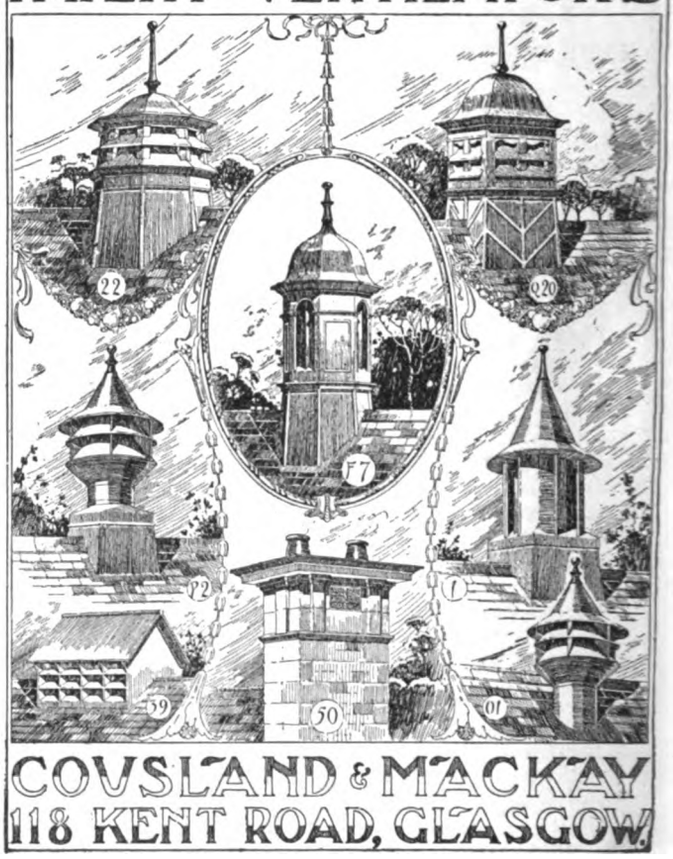
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THE ARCHITECT

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FORTHCOMING EVENTS

Friday, February 4.

Town Planning Institute: Paper entitled "The Town Planning Proposals of the Urban Land Report," by Mr. H. R. Aldridge, at 92 Victoria Street, S.W., at 6 P.M.

Birmingham Architectural Association: Paper entitled "Recent Advances in the Theory of Ventilation," by Professor A. H. Barker.

Monday, February 7.

Surveyors' Institution: Paper entitled "Dilapidations—Some Notes and Suggestions," by Mr. C. F. Slater, F.S.I., at 5 P.M.

Royal Society of Arts: The first of three Fothergill Lectures on "Flemish Architecture," by Rev. Dr. Herbert West, D.D., A.R.I.B.A., at 4.30 P.M.

Victoria and Albert Museum: University Extension Lecture XVI. on "English Renaissance Architecture (1500-1900)—Elizabethan and Jacobean Architecture," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Wednesday, February 9.

Manchester Society of Architects: Paper entitled "Originality in Architecture," by Mr. L. Budden, M.A., A.R.I.B.A., at 6.30 P.M.

Carpenters' Hall: Lecture entitled "Sculptures of Rheims Cathedral," by Mr. Arthur Gardner, M.A., F.S.A., at 7.45 P.M.

Thursday, February 10.

British Museum: University Extension Lecture XVII., on "Roman Architecture (B.C. 100-A.D. 300): Theatres, Amphitheatres and Circuses," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

LESSONS OF THE WAR.

IN the report of the Employers' Parliamentary Council, which was presented at the annual meeting of the National Federation of Building Trade Employers of Great Britain and Ireland on Wednesday, January 26, reference is made to the lessons of the war as affecting the comparative values of labour. Although the report was presented to a meeting of building trade employers, it should not be supposed that the Parliamentary Council is concerned with the building trade alone. The Executive Committee of the Council contains, besides master builders, representatives of employers in the shipping, printing, gas-making, glass-bottle making, and tailoring trades, and also in the farming industry. The objects of the Employers' Parliamentary Council are defined to be: To take action with respect to any Bills introduced into either House of Parliament affecting the interests of trade, of free contract, and of labour, or with respect to the action of national or local authorities affecting in any way the said interests.

The report refers to the drastic character of the powers given to the Government to regulate labour, prices, profits, and wages, and to control the industries connected with the supply of equipment and munitions for the naval and military forces of the Crown. We might add to this the introduction of compulsory service and the power given to the Government to commandeer property required for national purposes under the Defence of the Realm Act.

From the drastic upheaval of pre-war conditions that these alterations have effected, we learn the lesson that those conditions were such as to prevent us as a nation from putting forward our whole strength or even such a portion of our whole strength as is required to defeat the enemy with whom we are at war. The conditions which required this drastic upheaval were chiefly those produced by so-called "social reform" and the actions of the trade unions.

Referring to the social legislation introduced by possibly well-meaning faddists, the report before us says: "During the twenty-five years before the war, to go no farther back, measures innumerable had been added to the Statute Book meddling and interfering in every possible way with the management and conduct of nearly, if not quite, all the trades and industries of the country, limiting the capacity and impairing the efficiency of labour, restricting the freedom of capital, checking industrial development, hampering individual effort, and adding enormously to the cost of production."

Directly the need for real effort came, the clogs placed on the wheels of industry by social legislation were swept away with a ruthlessness which was a forcible comment upon their pretended beneficence. The nation has had to put its back into its work, and the legislative restrictions upon efficiency have gone by the board.

There can be little doubt that after the end of the present conflict of armed men there will succeed a no less strenuous struggle—a commercial and industrial war. We shall be confronted by the same enemies, and their endeavours at our subjugation in trade and manufacture which, before the present war, had already achieved considerable success and furnished those enemies with the means by which they hoped to attain also their ambition for our political subjugation, will be renewed with the most intense energy of which they are capable.

Our social legislation has been proved to be utterly incompatible with the full development of our potential efficiency in war, whether of arms, of trade, or of manufacture.

The experience of war-time has shown the wage-earners that they are quite capable of producing a better output of work than they have been accustomed to do in peace-time, that as a result of this better output they earn and receive more money and so are enabled to enjoy pleasures and luxuries that were unattainable by them before.

The nation at large has been taught that we are capable of a vastly greater production of manufactures than we used to turn out. True, our products now are shells, rifles, machine-guns, and other implements for destruction. But hereafter, instead of shells we can make plough-shares, instead of rifles electrical and other machinery. We can produce these in so much greater quantities that we can sell cheaply and undercut the Germans, as they have during the last twenty-five years been undercutting us. The whole country, but essentially the wage-earners, will be better off for increased production. Herein the war has shown up in startling clearness the falsity of one of the fundamental tenets of labour trade unions.

On the subject of labour-union restrictions, the report before us speaks strongly.

The past year, it says, has been one pregnant with grave issues affecting the future relations of capital and labour in Great Britain. Moreover, employers have witnessed a procession of startling events which have confirmed all their predictions with regard to labour legislation and the methods of labour unions in recent years. Let it be here made clear that the Employers' Parliamentary Council is not opposed to labour unionism in its real province, that of watching and protecting the

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legitimate interests of those it represents. That workmen should combine to protect themselves and advance their own welfare is a proposition to which few, if any, would be disposed to object. But when labour unions are used for the purposes of inflicting wrong upon others, of preventing free men from exercising their rights, and of committing acts injurious to the community, they are departing from their proper functions and should be checked accordingly. It is the abuse, and not the use, of their powers to which employers take exception, and it is to resist this abuse that employers combine.

If, at the great representative meeting of employers' associations held under the auspices of the Council in February 1914, to consider the grave situation due to the Trade Disputes Act and to the unchecked conspiracy of labour unionism against private freedom and public welfare, anyone had predicted that before the year was out the Government, which turned a deaf ear to every protest of employers in these respects, would itself experience the disastrous effects of that conspiracy, he would not have been believed. The leaders of political parties chose to ignore the fact that the trades and industries of the country had to submit to the control of an organised despotism whose acts had been placed above the law. When those leaders were asked to receive a deputation of employers who desired to give reasons why freedom and security should be assured to labour, why all combinations either of capital or labour should be subjected to the ordinary law of the land, and why federations for "paralysing the country" by means of a general strike or lock-out should be suppressed, they treated the matter with supreme indifference.

It is regrettable that the Government, in its endeavours to pacify the trade-union leaders, or rather managers, should have pledged itself to a restoration after the war of the old conditions and of the restrictions of the unions upon labour. Fortunately, both before the war and during its progress, there have been indications that the managers of the trade unions are no longer the leaders, and that the British working man has sufficient common sense and sufficient independence to throw over his managers when they attempt to lead him in a wrong direction.

Our victory in the present war, when it comes, will be principally due to the unity of capital and labour, of employer and employed in the manufacture of the munitions, with the resultant overthrow of labour-union restrictions. Is it too much to hope that in the coming industrial and mercantile war there may be manifested a similar victory? We suggest that even now is the time when the Employers' Federations and Councils should be considering how they can best maintain that unity, eliminate suspicion and mistrust on the part of the employed, and press home the lesson of the war, that the prosperity of the wage-earner lies in giving his best output day by day, not in restricting the minimum in accordance with the teaching of the trade-union managers, teaching that appeals to the baser inclination of the workers and is based upon an utterly false view of labour's best economic policy.

NOTES AND COMMENTS.

WE referred recently in these columns to the endeavour in Manchester to induce the Local Government Board to take some steps to mitigate the shortage of houses for the working classes in that city. In correspondence between the Local Government Board and the Manchester and District House Builders' Association the latter expresses the opinion that there is an increasing shortage of houses for the working classes, and that the position will be really serious at the conclusion of the war when thousands of men return from the Front. The Association suggest that steps might be taken now by the Local Government Board which would relieve the position in a large degree, and that an inquiry should be held in Manchester to consider the question of a lack of house accommodation.

The Local Government Board, in their reply, pointed to the shortage of inspectors owing to so large a proportion of them being on war service, and asked that the investigation suggested should be deferred to a more convenient period. The results of an inquiry now, it was submitted, might mislead people as to the normal position of the city.

The correspondence has been referred to the Sanitary Committee of the Manchester Corporation for their consideration, and a sub-committee has been appointed to consider the points raised in the correspondence and to confer with representatives of the Improvement and Buildings Committee, the Highways Committee, and the Town Planning Committee of the Corporation.

There seems to be no doubt that the dearth of small houses in Manchester has been accentuated by the demand for such houses by middle-class tenants, who, having been hard hit by the war and not enjoying the industrial boom which has so greatly benefited the weekly wage-earners, the so-called working classes, have been forced to look out for smaller houses and preferably those let at weekly rentals.

The stringency of the by-laws, the high prices of building materials, and the diversion of capital into more remunerative channels than that of speculative house-building are given as the chief reasons for the existing scarcity of small-rented houses.

We learn from "Indian Engineering" that it has been announced that Mr. H. V. Lanchester, Town-planning Adviser to the Madras Government, would deliver a course of twelve lectures on town planning between January 17 and 29 at the Madras Engineering College. He proposed to hold at the same time a practical class for the benefit of municipal engineers. The subject-matter of the twelve lectures is given below:—(1) The ethics of town planning; (2) civic survey methods; (3) the economics of the civic survey; (4) historical study of town planning; (5) tradition and city development; (6) city life and housing; (7) commerce and traffic; (8) contrasts—European and Indian cities; (9) problems in India; (10) the uses of the Town-planning Act; (11) the technique of city improvement; (12) Madras City. In this connection the Government of Madras issued an order in which municipal councils were requested to depute their engineers of different grades to attend the lectures, the order applying also to district boards.

The exhibition of Mestrovic's work at the Leeds Art Gallery has called forth from the Belgian critic, Abel Torcy (Max Blieck), a description and criticism in the "Yorkshire Post," in which the true position of the sculptor is well estimated. The Belgian critic says: "Error is committed by placing the works of Mestrovic above the plastic masterpieces of 'our age.' He is worthy of the respectful attention of criticism, and will hold an honourable place in the history of art. But it is a disservice to such an artist to exaggerate his 'genius,' and to tell us that the Temple of Kossovo is a sublime gift from Serbia to the rest of humanity."

The Edinburgh Dean of Guild Court has granted the necessary permission for the carrying out of interesting work to an old house in Abbey Strand, Holyrood. This is a building of some historical interest, and though it is not known who occupied it in olden times, it is estimated that the original part of the erection is some 250 years old. It seems to have been added to about a century ago. Many of its ancient features have been completely obliterated and spoiled, and the intention of the gentleman who has become proprietor is to have it restored to its original condition externally and to make it thoroughly sanitary within. The work, which is to be

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carried out under the advice and supervision of Dr. Thomas Ross, architect, will consist of taking out the two top storeys, thereby, of course, lowering the height of the building, and restoring a series of dormer or pedimented windows of masonry construction. The building is at present used as a tenement, and the alterations that will be effected will have the good result of greatly reducing the existing congested state of occupancy from about twenty-five families to about fifteen. Buildings in the rear will be demolished and removed, so that an open air space will be created, which, if suitably laid out, would introduce an attractive spot to this part of the Canongate. The site selected for the King Edward Memorial is immediately adjacent, and the removal of these old and partially dilapidated buildings will add not a little to the general amenity of the surroundings of the memorial. The building which is thus to be restored adjoins the three-gabled house of Luckie Spence, immortalised by Allan Ramsay. Owing to the proximity to the Holyrood Palace precincts, the work of restoration is rendered all the more important and interesting.

In the report of the secretary of the Yorkshire Archæological Society mention is made of the excavation of the Roman site at Slack which has been continued for the third season during the past summer under the superintendence of Mr. A. M. Woodward, with the result that, except for a few comparatively minor points, the arrangements and defences of that part of the fort situated on Mr. Thomas Brooke's property have now been worked out. The Roman Antiquities Committee recommended the cessation of operations during 1916, and, if arrangements could be made with the owner, their resumption after the declaration of peace. It is the intention to publish a full report of the excavations when they are completed. For the present the finds are housed partly at Leeds University and partly at the Huddersfield Technical College. Among other items the uncovering of a mediæval grave slab at Well, the finding of a hoard of Roman coins at Halifax, the discovery of architectural remains of a chapel in the manor house of Thornthorpe, communicated to the Council during the past year, resulted in scientific investigation being made, and in the more important cases an account would appear in the Journal. The value of the preservation of such reports, drawn up at the time of the discoveries, could not be over-estimated.



From a Drawing by the Late A. E. Lowes, A.R.I.B.A.

At the eighth annual meeting of the Old Edinburgh Club, the president, Mr. W. Moir Bryce, made the pleasing announcement that as a sequel to the attention which the Club recently drew to the historical and other defects in the windows of St. Margaret's Chapel, the whole of these windows were about to be replaced with stained glass and an appropriate and homogeneous design by and at the cost of Mr. Douglas Strachan, the great Scottish artist in that material. That has been brought about by the public-spirited action of the Cockburn Association. Mr. Strachan had most generously agreed to make a free gift to the Chapel, and in that way to the Scottish people, of all five windows on condition that the Cockburn Association should hand over to one or more of the war funds the cost of the three windows in the nave.

THE LATE PRIVATE A. E. LOWES.

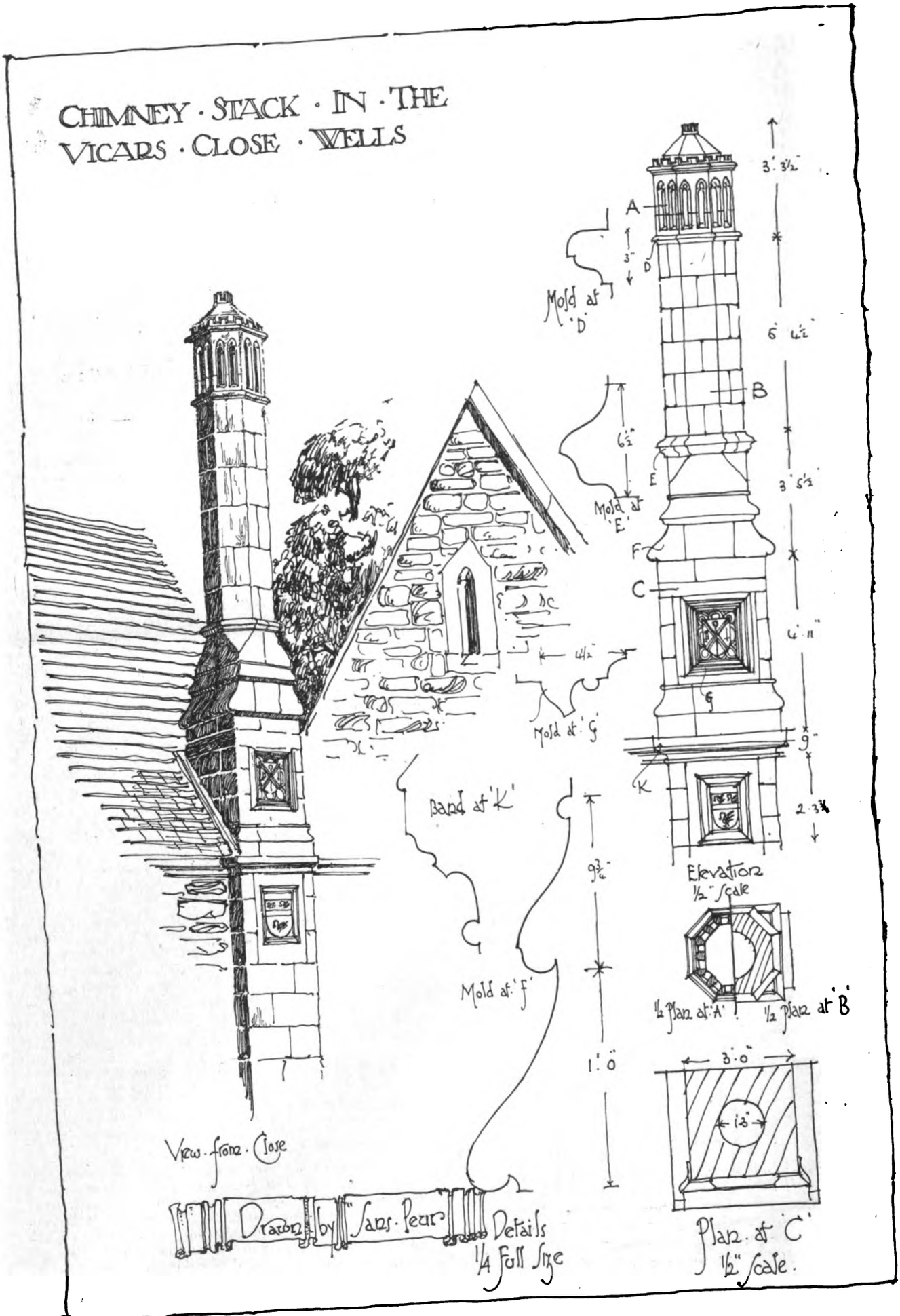
WE referred in "The Architect" of May 7, 1915, to the death in action on April 26 of Private Albert Edward Lowes, A.R.I.B.A., who was with the Army Service Corps attached to the 6th Northumberland Fusiliers, and who was the holder of "The Architect" Travelling Studentship in 1911.

It is now announced in the "R.I.B.A. Journal" that a memorial tablet erected to the memory of Private Albert Edward Lowes, R.I.B.A., Army Service Corps, killed in action in Flanders on April 26, 1915, was formally unveiled by Major-General H. A. K. Montgomery in Jesmond Parish Church, on Saturday afternoon. The tablet was inscribed: "In memory of Albert Edward Lowes, A.R.I.B.A., of the Northumberland Divisional Train, A.S.C. Born the 26th August, 1888; killed in action at Ypres, 26th April, 1915. A devoted Christian, a skilful architect, a good soldier.



From a Drawing by the Late A. E. Lowes A.R.I.B.A.

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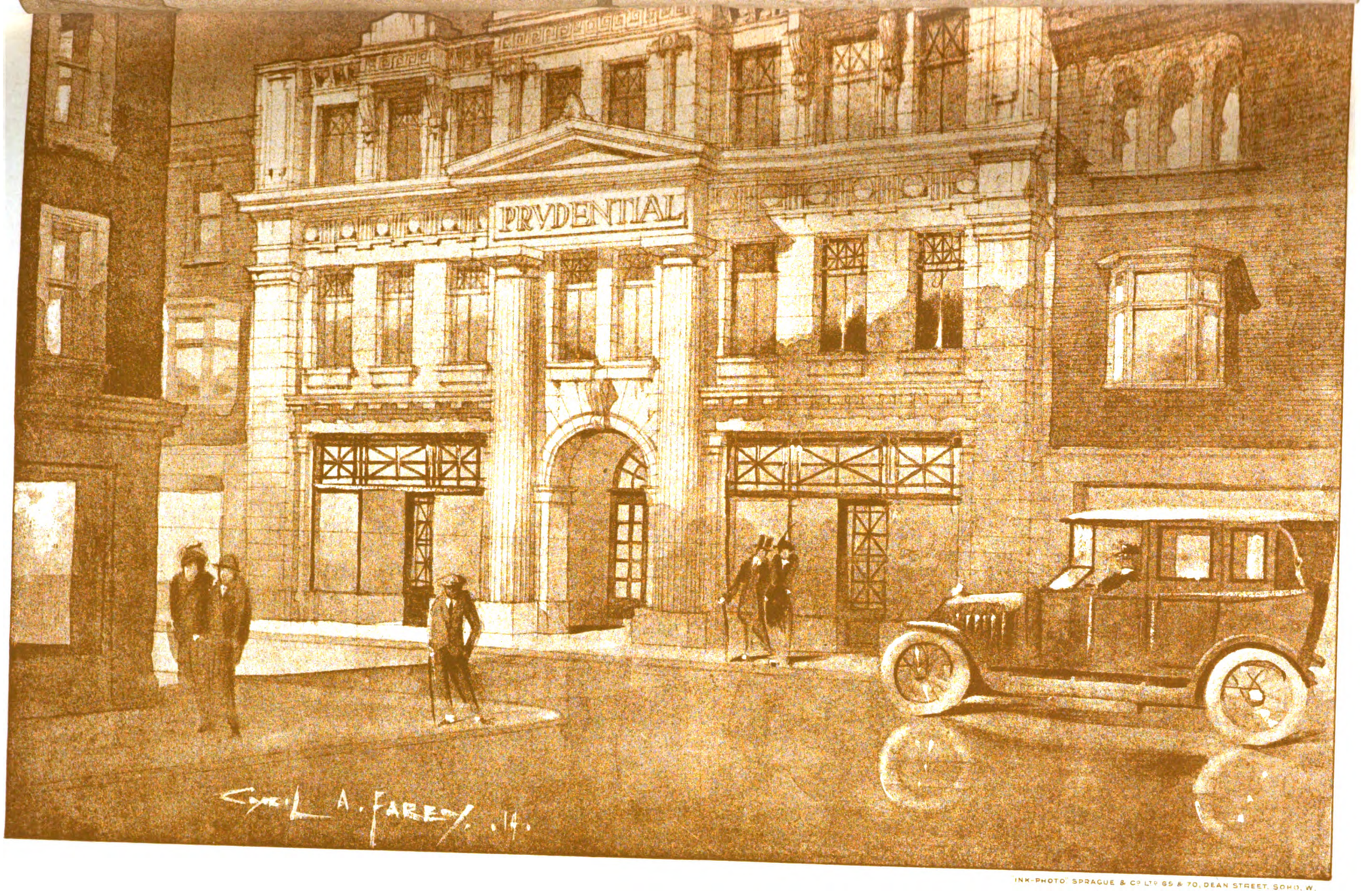
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PRELIMINARY DESIGN FOR PRUDENTIAL OFFICES, LEICESTER.

Mr. PAUL WATERHOUSE, M.A., F.R.I.B.A., Architect.

(Royal Academy Exhibition, 1915)

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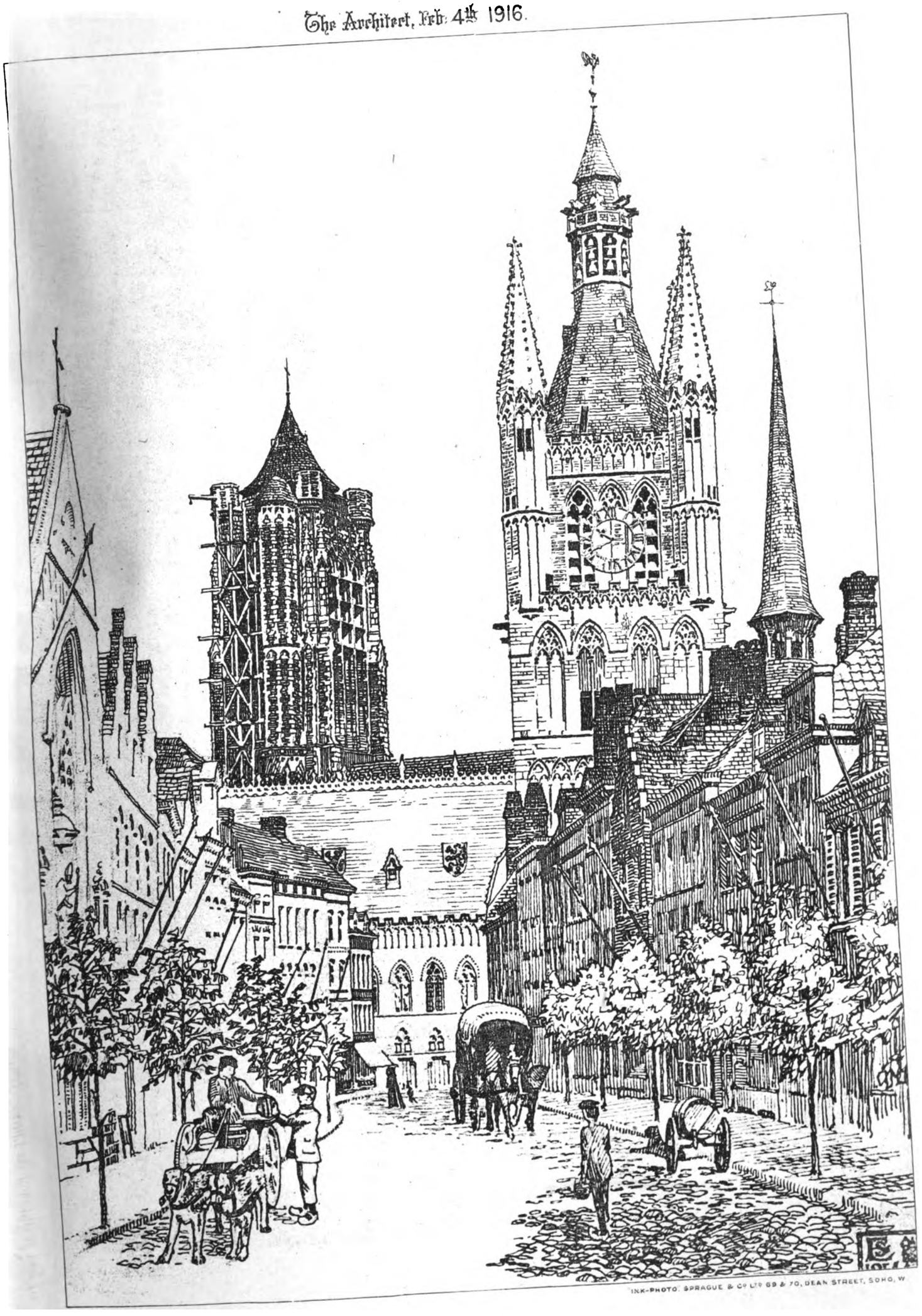


ST. MALO.

From a water-colour by Sergeant C. MARESCO PEARCE.

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YPRES.—April, 1914.

From a pen-and-ink drawing by Private ERIC SHARPE.

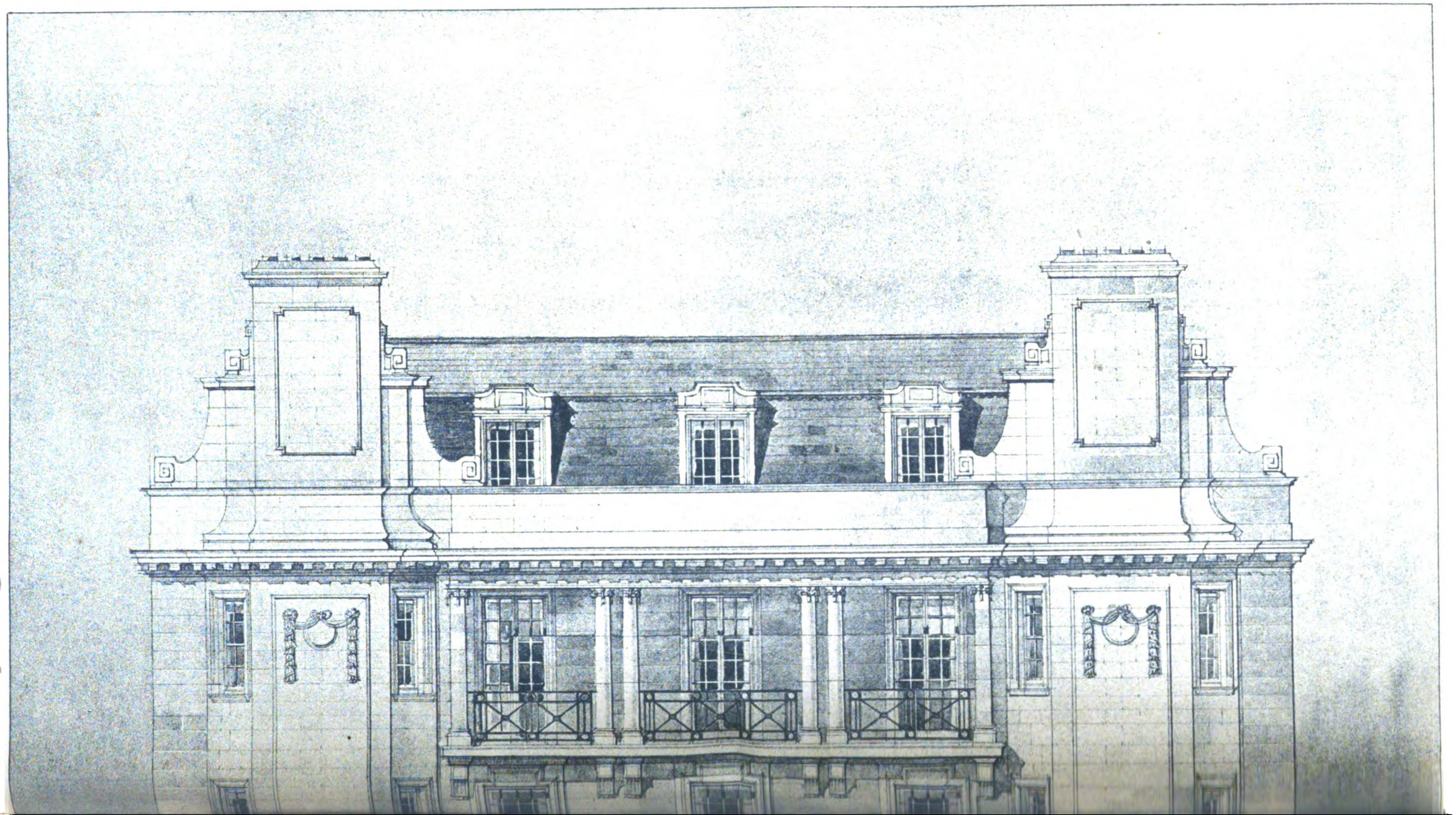
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Nº 8 QVEEN ANNE STREET, W.

W. HENRY WHITE F.R.I.B.A. ARCHITECT
14A CAVENDISH PLACE CAVENDISH SQ. W.

INK-PHOTO SPRAGUE & Co LTD 69 & 70 DEAN STREET SOHO W.

(Royal Academy Exhibition, 1915)

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Ars longa, vita brevis. Erected by his mother." Canon Inskip stated that Mr. Lowes' spare time had been spent as a Territorial, and, joining the A.S.C., he became associated with his old comrades of the 6th Northumberland Fusiliers, going to the Front on April 18. In a position of great danger he was giving refreshment to wounded comrades when a shell exploded and he was killed.

We reproduce some sketches by Mr. Lowes which were contributed to "The Architect" Students' Sketching and Measuring Club.

ILLUSTRATIONS.

NO. 8 QUEEN ANNE STREET, W.

THIS design was made by Mr. W. Henry White, F.R.I.B.A., for the late Mr. W. Willett, who built the house.

The building is faced with Portland stone, and roofed with Westmoreland green slates. The house is situated on the corner of Queen Anne Street and Mansfield Street, and the illustration shows the side to the latter street.

The drawing was exhibited in the Royal Academy Exhibition, 1915.

PRUDENTIAL BUILDINGS, LEICESTER.

THE design here illustrated is Mr. Paul Waterhouse's preliminary scheme for the Prudential Assurance Company's offices at Leicester. The building, as actually in progress, differs considerably, though the Greek Doric character is maintained. There is a range of four three-quarter columns in lieu of the central pedimented feature.

ST. MALO.
YPRES, APRIL 1914.

THESE drawings, by Sergeant C. Maresco Pearce and Private Sharpe, were included in the exhibition at the Leicester Galleries of paintings and etchings by members of the Artists' Rifles, of which a review was given in "The Architect" of January 21.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A GENERAL MEETING (Ordinary) of the R.I.B.A. was held on Monday, January 31, at Conduit Street, W. Mr. Ernest Newton, A.R.A., President, occupied the chair.

The Hon. Secretary said he deeply regretted to announce that since the last meeting news had arrived that the following members serving with the Forces have been killed in action, viz.:—

Private James Everett Bownass, of Princess Patricia's Canadian Light Infantry, Associate.

Capt. Arthur Maxwell Philips, of the 11th Bn. King's Own Yorkshire Light Infantry, Licentiate.

2nd Lieut. T. B. D. Hough, of the 8th East Yorkshire Regiment, Student.

He moved that the deep regrets of the Institute for the loss the profession has sustained by the death of these gallant young men be entered on the minutes of the meeting, and that a message expressive of the Institute's sincerest sympathy be forwarded to their nearest relatives.

The Hon. Secretary announced the decease of John Ely, Fellow, Past President of the Manchester Society of Architects, who served for a time on the Council of the Royal Institute. He begged to move that the regrets of the Institute for the loss of its esteemed Fellow and past Member of Council be recorded on the minutes of this meeting, and that a vote of sympathy and condolence be passed to his relatives.

He further announced the decease of John Walton Taylor, Fellow; Fred. William Burwell, Fellow; Baldwin Brown, Associate; Robert Dewar Nicol, Associate; William Whymper, Associate; Harry William Wakeman, Licentiate.

The Secretary announced that the following gentlemen have been nominated for election as Fellows of the Royal Institute: John Fairweather, Associate, 1894; Ernest Budge Glanfield, Associate, 1911; Edward Percy Hinde, Associate, 1888; Harry Garnham Watkins, Associate, 1895, and James Hastie Wardrop, who passed the Special Examination last June, has been nominated for election as Associate.

It was also announced that the Council have reinstated Mr. Alexander Robert Meldrum as a Licentiate of the Royal Institute.

The President announced that the Council have unanimously nominated Sir R. Rowand Anderson, LL.D., Fellow, as a fit recipient of the Royal Gold Medal for the current year, in recognition of the merit of his executed work, his services to architectural education, and his high character and lofty ideals in the art of architecture.

Mr. Ernest Newton called the attention of the meeting to the drawings hung on the walls of the room. They represent the designs and working drawings by the late William Burges, A.R.A., for his house in Melbury Road, Kensington, its decorations, fittings and furniture. Through the instrumentality of their esteemed Fellow, Mr. R. A. Briggs, these valuable drawings have come into the possession of the Institute, having been presented by Mrs. Wentworth Watson, a niece of Burges, who now owns and occupies the house.

A very hearty vote of thanks was accorded to Mrs. Watson for this valuable and interesting present, and to Mr. Briggs for his kind thought, and the trouble he has taken on the Institute's behalf.

The President mentioned that the Institute has lately acquired, through the generosity of various donors, several drawings and sketch notes by the late Norman Shaw, R.A.; G. E. Street, R.A., and W. E. Nesfield. The drawings are working drawings, some of them the contract plans for buildings about to be constructed. The next meeting will be a Business Meeting, to be held on February 28, for the election of members, and for the election of the Royal Gold Medallist for the current year.

A FACULTY has been issued for the erection of a reredos of oak in the parish church of Shenstone, in memory of Second-Lieutenant Michael V. Molloy, machine-gun officer in the 2nd Batt. Sherwood Foresters, who fell at Hooge. Deceased was the son of the Vicar.

NEWS has reached Chester of the death from wounds of Second-Lieutenant W. E. Davies, of the 5th Cheshire Territorials, one of three soldier sons of Mr. S. Percy Davies, a well-known citizen. The lieutenant, who was an architect by profession, was returning from a working party when he was struck on the head by shrapnel. He had been at the Front since July, and was aged twenty-four.

MR. W. LLEWELYN WILLIAMS, K.C., M.P., has received a letter from the Chancellor of the Exchequer agreeing to allow the Welsh Ancient Monuments Commission to extend its present span of life—which had been suspended until after the war—on a reduced allowance from the State, in order to bring out the volume dealing with Merionethshire. The Carmarthenshire volume is now in the printers' hands, and will be out in a few weeks.

LOUIS RAEMAEKER'S war cartoons had to leave this country on February 1 to be exhibited in Paris contemporaneously with the festivities arranged in the artist's honour in that city by the State, the city of Paris, and the artists. To meet this withdrawal and to avoid a break in the continuity of the exhibition at the Fine Art Society's Galleries, it has been arranged to exhibit a series of reproductions in colour facsimile of the cartoons which have the artist's imprimatur as to their excellency in illustrating his work. One hundred of these facsimiles will be used for a sumptuous volume entitled "A Neutral's Indictment," at ten guineas, with letterpress by an eminent author.

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AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—V.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

THESE expansive inland lakes, miles in area, with their borders of high mountain ranges, clothed on the lower hills in rich growth of variegated colours from the water's edge to the very peaks, present opportunities and problems unknown, or almost so, to our countrymen.

In a variety of ways everything seems so new and uncommon to the Britisher.



LAKE OF LUGANO FROM SUMMIT OF MONTE SAN SALVATORE, SHOWING TWO LAKE STEAMERS.

There appears to be scant scope for commerce, at least of the legitimate kind, for the dwellers on these mountain slopes. Access to and from their districts presents almost insuperable obstacles in most instances.

The obvious poverty of the people must consequently be due in a large measure to their natural cramped and hemmed-in situations, rendering fishing and fruit-growing practically their only occupations.

Without doubt a fair income must in normal times, and more especially during certain seasons, be derived from the attention proffered on the part of the native populations to the desires and comforts of the many thousands of travellers from all parts of the world to these favourite health and pleasure resorts. In addition a certain income to the native populations must of necessity follow the residence within their midst of the wealthy owners of the mansions, a large number of which are scattered over the slopes of the mountain sides and the shores of the lake.

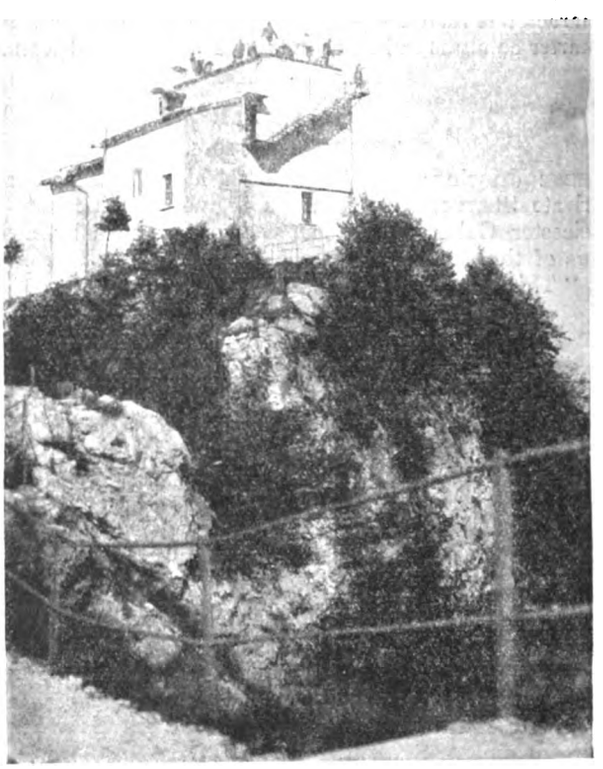
It is much to be regretted also that a large section of these native residents of most of the lake-side villages and towns derive most if not all of their incomes (in normal times, and during the holiday season) from begging, a national nuisance to which the traveller in Italy must unfortunately accustom himself. This pernicious practice, owing to the misplaced generosity of the average traveller and possibly very largely owing to the increasing poverty in certain parts, is certainly on the increase. More frequently than otherwise the street beggars are able-bodied loafers who are by no means deserving of the smallest assistance.

The livelihood, however, of these lake-side people is by no means certain, regular, or secure; it is precarious, relying as it does upon such a number of circumstances and conditions.

It therefore follows that the great war now waging must be affecting very detrimentally and to a large degree the prosperity of the peoples of these particular neutral zones.

Switzerland, although suffering indirectly, is however, so far at least, saved from the horrors of war within her frontiers.

One whole day or more may be spent very enjoyably and very profitably skirting the shores of the lake in one of the little steamers, and by such means a much closer study may be made of the character of the quaint little villages and their native residents.



SMALL PILGRIMAGE CHAPEL, SUMMIT OF MONTE SAN SALVATORE.

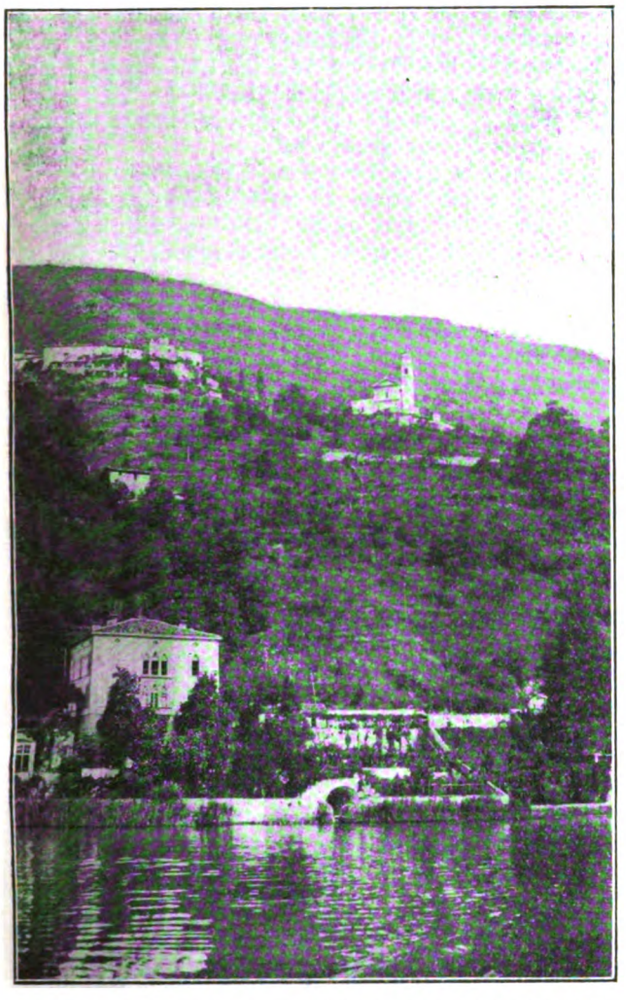
In skimming rapidly over the waters of the lake, viewing numbers of these snug little hamlets tucked away in the hollows at the base of the towering mountains, one thought above all others is forcibly impressed upon one's mind, more especially the mind of the architectural student, and that is the amazing disparity existing between the peoples' homes and the peoples' churches.

Apart from the palatial residences mentioned before in these beautiful parts—residences very largely occupied by their owners only for a small part of each year—and the fine hotels and pensions in the larger lake-side towns and villages, the comparison between the

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dwellings of the ordinary people and their churches is odious in the extreme.

The churches are, as a rule, fine architectural monuments, and are situate in the finest of positions and generally isolated from the surrounding buildings. The dwellings of the large proportion of the inhabitants are, as a general rule, huddled together in unordered masses, badly lighted, ventilated, and planned, around courts and



SAN MAMETTE, DRANO, AND PURIA, LAKE OF LUGANO.

alley-ways and lanes, upon the very limited area of reasonably flat ground situate close to the lake-edge, or on the lower slopes of the mountains. This system has caused the elongation of the residential areas and the cramping, beyond all conception, of the hovels in which live the poorer—that is, by far the greater—section of the populations.

Much may be said about the squalor existing in these lake-side villages, the filthy state of the residents and their homes, all bearing unmistakable signs of poverty, due to drink and the laziness caused by religious "feste"; but it must be admitted that much of this is without doubt due in a very large measure to the dreadful conditions under which these people are necessarily forced to live.

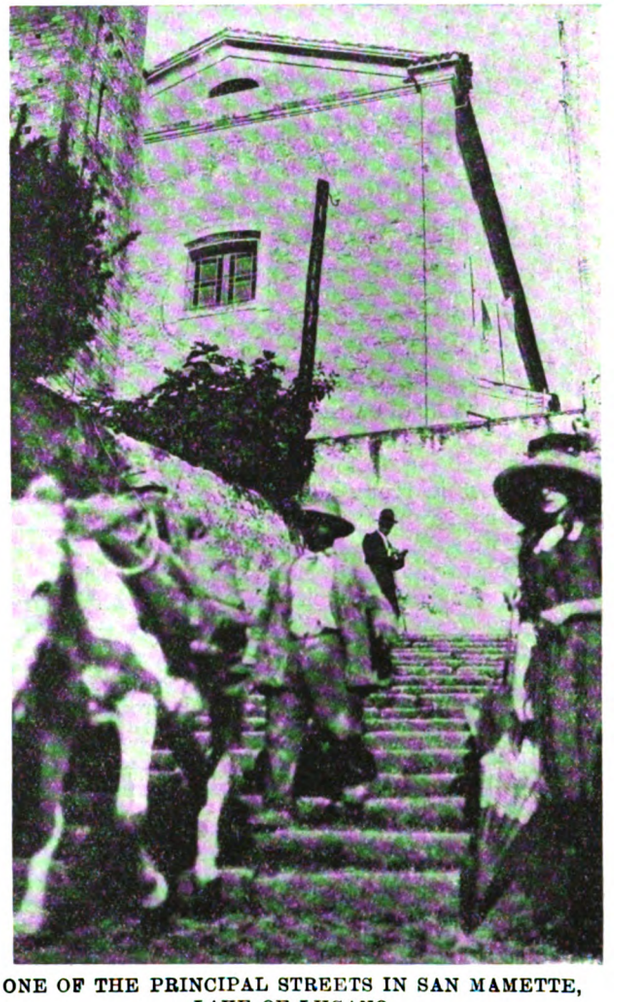
The necessity for good ventilation and plenty of light, for the health and happiness of the people, appears to have been overlooked by those responsible for the awful planning of some of these villages and towns.

That such consideration—or, more accurately, want of consideration—was not due to ignorance is very prominently emphasised by the skill displayed in the selection of the sites for the houses of worship and the great ability evidenced in their planning, design, construction, and ornamentation. Perhaps it was thought that magnificent houses of God would make up for all the deficiencies in the houses for the people.

Within these temples of worship are to be seen some of the finest works of the great Italian masters, elaborate and ornate decorations, costly vestments, and magnificent fittings. Yet within the dark dingy dwellings of the people, arrangements for the health and comfort of the tenants are very conspicuous by their absence, and signs of the most abject poverty are to be seen on all sides.

It is therefore greatly to be wondered at that the native residents of these parts under such circumstances should exhibit, outwardly at any rate, evidences of gayness and almost sparkling vivacity, when condemned to live under such depressing and unhealthy conditions. It may be perhaps that Nature, so full of life and beauty and with the surroundings so fresh with flower and tree-life, framed with the distant mountain peaks and glassy waters, with the musical tinkling of the little cow-bells from the distant slopes adding to the harmony of the scene, is so supremely grand that even the most terrible of housing conditions fail to damp the native light-heartedness of these Italian villagers. Although one may not be quite prepared to agree with their idea of religion, yet the great reverence shown by these poor ragged people on entering their sacred edifices is touching to a degree.

From the motor-boat innumerable wire rope-ways may be seen with the goods and bundles of timber passing from the mountain-tops to the villages below and vice versa. The picturesque lake-side cafés are passed with their water-edged terraces with awning coverings. The quaint old-time squares are visited, with the old women offering their wares for sale close to the landing stages where the passenger steamers regularly call. The absence of that excitement amongst the natives, occasioned by the arrival of these steamers and the embarking and disembarking



ONE OF THE PRINCIPAL STREETS IN SAN MAMETTE, LAKE OF LUGANO.

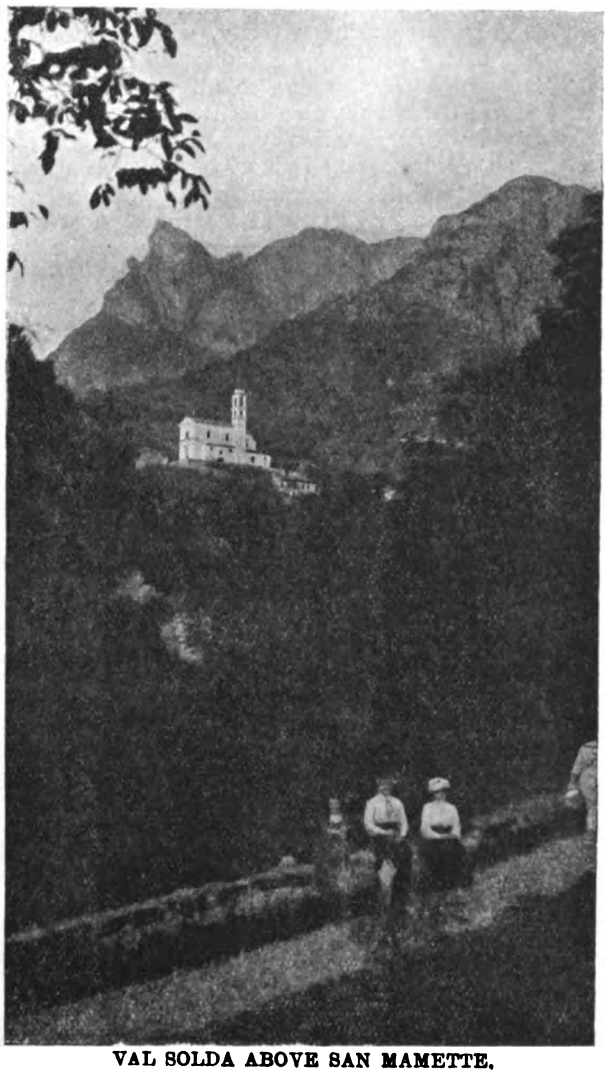
of the passengers and the consequent embarrassing curiosity and unwelcome attention displayed to strangers, is perhaps to the student one of the most agreeable features of the motor-launch trip.

Leaving Lugano near the Lugano-Centrale pier, in that arm of the lake known as the Bay of Lugano, on the shores of which is situated the town, and getting

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quickly away from the land, a magnificent view of Lugano and district is obtained, with Monte Brè on one side to the north and Monte San Salvatore on the other to the south.

Castagnola, at the base of Monte Brè, is the first point of interest. The lake is then crossed to Cantine



VAL SOLDA ABOVE SAN MAMETTE.

di Caprino at the foot of Monte Caprino, from which point a most inspiring view of Monte San Salvatore is provided, rising sheer out of the lake, with San Martino at its base on the lake side.

Turning to the northwards some of these impressive mountain pictures are seen; Val Solda, with its grassy slopes, and Castello, majestically situated on its mountain eminence, and the picturesque San Mamette on the water's edge, all casting their reflections into the lake.

From Cantine di Caprino the lake is crossed obliquely to Gándria, with its pretty little houses and its terraces partly covered with trailing vines on the precipitous mountain slopes, and then Bellarma is touched, on the north bank of the lake.

At this point on the lake the frontier between Switzerland and Italy is crossed, and, with the arrival at Oria, Northern Italy is entered for a time, not perhaps exceeding one hour or so. The steep northern slopes of Monte di Caprino with the rocky grottoes at its base and the northern bank of the lake west of Bellarma are in Swiss territory.

Then San Mamette, a delightfully picturesque, quaint, dirty little Italian village, with all the good points and all the bad points as to situation, native residents, their homes, churches, streets, and qualities already fully described.

This little place was specially explored and some interesting pictures were taken. Its little church was entered and the resident Italian priest was exceedingly kind and courteous, escorting the writer round his quaint little church, pointing out all its beauties and possessions.

Continuing the passage up the lake, Cresogno and Cina at the base of the steep hills on the west bank are passed, and Porlezza at the furthermost (north-east) arm of the lake is reached.

Porlezza is the Italian torpedo-boat station, and several of these dark-looking little craft were seen on the occasion of this visit. These small warships are used to prevent smuggling proceeding from territory to territory, the searchlights flashing over the lake at nighttime producing a very picturesque and weird effect.

Here is also the Custom-house, and Porlezza also possesses a large glass works.

Osteno is next visited on the north bank, with its many beautiful grottoes, ravines, brooks, and gorges, and other interesting sights. On the south bank, again, stands the old church of Santa Margherita, at the foot of the steep Monte Caslé.

Swiss territory is again entered, and passing on the left Caprino and crossing the lake to San Martino, soon the village of Campione, the home of the Lombard sculptors of the thirteenth and fourteenth centuries, is reached. Here is situate the church of Madonna dell' Annunziata, containing the fourteenth-century frescoes depicting the life of John the Baptist. Passing under one of the arches



MORCOTE, LAKE OF LUGANO.

of the Ponte Diga, a stone viaduct across the lake, carrying the road and railway line and joining Melida and Bissone, into the south-east arm of the lake known as the lake of Capolago, with the Punta di Poiano, a spur of the Monte San Giorgio separating this south-east arm from the west arm of the lake, a stop is made at Morcote, a truly beautiful little town placed on the south angle of Monte Arbostora.

This is architecturally the most beautiful of the villages on the shores of the lake. The illustration shows the delightful effects caused by the reflections cast into

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the waters of the lake; the outstanding feature being the church of Madonna del Sasso, with its characteristically Italian tower forming such a distinctive feature, with the ruins of a castle below, looking down upon the particularly pretty rows of arcaded houses.

Porto Ceresio is then visited, again in Italian territory, and numerous other villages of considerable interest, including Ponte Tresa, consisting of two villages, one being Swiss and the other Italian, divided by the river Tresa, which enters the lake at this point.

If time permits, a very enjoyable afternoon may be spent by taking the light railway from Ponte Tresa to Luino, travelling along the left bank of the clear and swift-running Tresa, which at this point forms the boundary between Italy and Switzerland.

There are numbers of pretty little villages to be seen on this short journey, and a number of churches prominently dotted about the hillsides. From Luino the passenger steamer may be taken if it is desired to visit Lake Maggiore.

The return journey is made to Lugano, and a most delightful trip, or series of trips as the case may be, come to an end.

(To be continued.)

THE CLOSING OF MUSEUMS.

THE third report of the Committee on Retrenchment in the Public Expenditure was published as a White Paper on Tuesday last. It is as follows:—

Since the issue of our last Report we have resumed our sittings under the Chairmanship of the Financial Secretary to the Treasury, and we have taken further evidence from public Departments on the basis of which we propose to submit recommendations at an early date. One question, however, appears to us to deserve separate treatment, viz., the closing of museums, picture galleries, &c.

The total cost included in the Estimates for 1915-16 for the upkeep of the various museums, picture galleries, &c., in the United Kingdom is about £300,000, in addition to the cost of maintenance of buildings, stationery, rates, &c., included in other Votes. The receipts from the public are estimated to amount to only about £3,000 in respect of student-days and payments for catalogues. We have felt bound to consider whether the cost to the Exchequer should not be reduced for the present, either by closing these institutions for the period of the war or by imposing temporary entrance fees on all days of the week and temporary charges for readers and students on special days. After careful consideration we have arrived at the conclusion that the former of these courses should be adopted without delay, for the following reasons:—

1. It is clearly desirable that all expenditure and employment of staff on services not absolutely necessary to the country during the war should be suspended as far as possible at the present time. On this principle, we do not consider that either the present expenditure on museums and galleries or the continued employment therein of large numbers of police and attendants can be justified.

2. There is no doubt that the policy of closure would effect substantial economies on police (costing at present £40,000 a year), and on heating and lighting (costing £30,000 a year), and also, to some extent, on cleaning—the savings under the last three items alone being estimated by the Office of Works at about £26,000 for a full year—and it would, in addition, set free a number of employees either for military service or for war work in other Government Departments which would otherwise require extra assistance from outside the Civil Service. Moreover, the use of some of the buildings for war purposes would save expenditure on hiring temporary accommodation elsewhere, as has already been shown in the case of the National Portrait Gallery in London, which is now closed to the public and is being used as a branch of the War Office.

3. The alternative of keeping the institutions open and charging entrance fees on all days of the week would be much less economical; the staff would still be employed on unnecessary work, and the receipts from fees would be comparatively small, as only a low fee could be charged without so material a reduction of attendances as to defeat the object in view. We are informed, for example, that a fee of 1*d.* at the British Museum would only yield about £2,500 a year.

4. Attendances at the various institutions, and receipts from admission fees and catalogue sales, have already diminished very largely, some of the best exhibits having been withdrawn from view. For instance, the attendances at the Wallace Collection have fallen from 175,000 in 1912 to 75,000 in 1914, and 47,000 in the first nine months of 1915; and admission fees and catalogue sales at the National Gallery have fallen from £2,223 and £1,037 respectively in 1913-14 to £387 and £141 respectively in the first half of 1915-16.

5. The closing of the museums and galleries would be a valuable object lesson in economy and would point the way to similar economies in local museums and galleries. It would also be in accordance with the policy already adopted in Paris, where all the museums and galleries except the Luxembourg (where the Senate sits) are closed.

We recommend, therefore, that all the museums, galleries, &c., should be closed to the public forthwith and placed at the disposal of the Government, as far as can be arranged, for other purposes. Special consideration might, however, be given to the case of the British Museum reading room, if a general desire is expressed in favour of keeping that portion of the Museum open, and it can be kept open without substantial expense to Votes of Parliament. If it be decided not to close the reading room, the concession should, in our opinion, be made subject to the condition that the cost of maintenance be met, as far as possible, during the war by imposing a charge on readers and reducing the expenditure on lighting, heating, and overtime by earlier closing each day.

The report is signed by the Hon. E. S. Montagu (Chairman), Mr. F. D. Acland, Viscount Midleton, Mr. H. T. Baker, Sir Leo Chiozza Money, Mr. J. F. Mason, Mr. E. Cecil, Mr. J. H. Thomas, Mr. Gaspard Farrer, and Mr. Harold Cox.

CIVIC ARTS ASSOCIATION.

THE Civic Arts Association was successfully inaugurated at the Mansion House on Friday afternoon last, when the Lord Mayor of London, as President, occupied the chair. The Vice-presidents are Mr. George Clausen, R.A., Professor W. R. Lethaby, F.S.A., Sir Cecil Harcourt Smith, LL.D., and Mr. Edward Warren, F.S.A. The General Council and the Executive Committee contain prominent names from many walks of life.

It was officially stated that the association was formed for the following and for kindred objects:—

1. To promote the utilisation, for civic purposes, of the arts and crafts throughout the country.

2. To be a consultative body on questions appertaining to memorials; so that these may be worthy of their purpose.

3. To support all efforts to embellish our cities, towns, and villages, by the employment of our artists and craftsmen.

It is thought that later opportunities may occur for the further development of the scheme for presenting gifts to the communities in the devastated areas in the countries of our Allies; and it is hoped that in that event the Civic Arts Association may perform a useful function.

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The Lord Mayor, in opening the proceedings, pointed out that both the fact of the meeting being held at the Mansion House, and that he had with much pleasure become their first President, showed the great interest which, both officially and personally, he took in the important objects for which the organisation was founded. In spite of the existence of other societies, the long-felt need of a Civic Arts Association had been conclusively established. The war caused one to see the immediate urgency of such an organisation, for there is no doubt that at the close of hostilities there will be a vast demand for memorials of all kinds—national, communal, regimental, and personal—and that demand must be met in a manner which will reflect credit upon the arts and crafts of the kingdom. Therefore, they were not a moment too soon in making preparations for that natural reaction in the architectural world which will inevitably follow the period of small output which artists and craftsmen have undergone during the past eighteen months. Care must be taken that these war memorials were excellent and appropriate, both in design and workmanship. The very notion that we may suffer, as in the past, from a multiplication of memorials which were ugly, trivial and commonplace, and on which money had been thrown away, filled us with shame and alarm. War memorials were, for the moment, their first concern. But there will always be scope for the operations of such a body as theirs—as, for instance, constant openings occurred for schemes of town-planning, in which order and beauty must have due and proper recognition. That day they were inaugurating a movement which he felt sure was destined to have a great and beneficent effect on those civic arts which were so essential to the happiness and pleasure of the community.

The Earl Beauchamp, in moving a resolution constituting the association, thanked the Lord Mayor for allowing the meeting to be held at the Mansion House, and for being first President; he could not imagine a greater help. They had just been told that part of the reason why they were forming a new organisation, was to act as a consultative body in respect of memorials. They did not wish those memorials to be turned out machine-made by the dozen, but to be the individual expression of an artist. And they believed one of the ways to do that was by an organisation like theirs. They co-ordinated societies which existed already. If a third reason was necessary, it might be found in the fact that people are beginning to realise the necessity for such organisation and co-ordination. They were beginning to learn that truth from their enemies. The association said the Fine Arts must be included in any scheme for the proper organisation of any State. It was admitted that the Royal Academy neither occupied, nor wished to occupy, the position of such a controlling body. In this country there was no tradition that taste should be organised in these matters by a Government department. In fact, he would be sorry for any Government department which tried to do it.

He believed it could be best done by an advisory body. The third object of the Association was "To support all efforts to embellish our cities, towns, and villages, by the employment of our artists and craftsmen." One of the most useful things the Association could do first was to encourage local authorities to employ their own artists. The authorities had built technical institutes and schools of art and turned out excellent craftsmen who design well and work well. But the local authorities do not employ those local craftsmen and go to London for an artist of established reputation instead of trusting to their work. That seemed to be a great pity. They had trained this local talent, and if the artists were given more opportunities they would turn out first-class work. The great cities of Italy, which were regarded as monuments of art, became monuments of art not because they sent to Rome or any other place, but because they made use of the artists living within their own walls. We of to-day were not sufficiently appreciative of the good local art which exists. Personally he wished patrons would be content with buying contemporary works. The large body of craftsmen whose good work can be seen at any exhibition deserves more encouragement. It was to be hoped one result of the Civic Arts Association would be that craftsmen would get some of that patronage. They wanted local authorities to take a great deal more pride in their own cities so that they become more like ideal cities well laid out. There were a number of ways in which a progressive town could beautify itself. One of the difficulties of the situation was not only that the artists came to London too much, but that the patrons came there also. The patrons fail to realise there is a man at home capable of doing the work. It was important the craftsman should be given due credit for his work, and that that system should be avoided by which a firm gains the credit for thoroughly individualistic work turned out by a craftsman with his own hand. He hoped one of the chief notes of the Civic Arts Association will be the planting of self-confidence. People in England could do extraordinarily good work, yet there was a general neglect of its own achievements. Germany had repeatedly adapted and popularised the work of English craftsmen—for instance, he believed the work of the Kelmscott Press was taken up and made a commercial success by the Germans. Work turned out by artists and craftsmen in this country was quite first class.

Professor Selwyn Image said it was certainly a sign of the times, and an encouraging sign, that the Lord Mayor should have granted the use of the Mansion House for the inaugural meeting of the Civic Arts Association and consented to take the chair at it. Of course the one thing dominant in the desires of all sound Englishmen and Englishwomen at the moment is that this righteous war of ours and our Allies against degraded, bestialising ideals should be fought to a victorious finish. And dominant that interest will remain till victory is won. All other interests are for the time being secondary to it. Yet though secondary, many of them are not unimportant, nay, are not other than imperious. Amongst those assuredly and in a foremost place amongst them is the great, the eternal human interest of Art. In the bygone easy-going days of peace we have been too accustomed to think of Art as a luxury, a pastime, a private affair for the connoisseur and collector—at best, a public affair of galleries and museums. But this terrific crisis in the world's history has come and is awakening us out of such stupidity. Stupidity indeed, whether we regard Art from the point of view of reason or of history. Yes, it is arousing us at last to an appreciation of that trenchant aphorism, "Life without industry is guilt, and industry without art is brutality." The war drags on its wearying course. But some time the war will end. And then—ah! what then?

What the Civic Arts Association has at heart is just this—to prepare ourselves betimes and to stir up our fellow-citizens to prepare themselves for the days that will follow the war, that they may not find us all in confusion without definite practical ideas, without fine ideals, and be frittered away. It is only one item, however immediate and important an item, in the many things we shall have to take thought for, this item we speak of under the term "War memorials." Those memorials will be of two kinds, private memorials and public memorials. It may seem at first flush as if with the former, with private memorials, we can have no concern, each man must be left to go his own way. He ventured to say not so, or so only in a limited sense. For when the time comes a large number of people will be only too grateful if in their several districts they can find some really authoritative body to whom they may go for generous counsel and guidance. The last thing in the world they will wish is that their offering in memory of the dead should be a mere conventional trade product. In every important centre throughout the kingdom such a

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consultative body might come, and ought to come, into existence, a small, carefully selected, intelligent, representative body of wide sympathies, beginning now at once to take matters into their most careful consideration from every point of view, preparing themselves to discover and make use of that large amount of local artistic talent which does really exist, and, alas! too often starves. Don't let us befool ourselves with the idea that, as if in the nature of things, London is the only place where first-rate design and craftsmanship may be had. There is immense danger in this over-concentration upon London. Sincerely may we hope that, so far as Art is concerned, one effect of the present upheaval may be largely to decentralise things, to restore not a little of that local work with its individual colour and interest, its personal characteristics, which for so many a day we have more and more let go to our loss. Those who in any sense have some share in the national encouragement of Art should lay this matter to heart, should feel it an obligation not merely to support good Art and technical schools in their particular locality, and think, "Here's an end of the matter," but, so far as they possibly can, to foster and make use of the individual talent of the students who have passed through those schools—make use of it there, so to say, in their and our home. Wisely seen to, the result of this, though its full effects cannot be compassed in a day, need not be contentment with amateurish, second-rate products. Once let the idea really be grasped we need not dread its being a barren idea. The present is a singularly felicitous moment for entertaining it seriously, and devising means for practically putting it to the test. Heaven forbid we should fly off airily on the job either of entertaining the idea, or, as its consequence, incontinently, inconsiderately, starting up and down the land such local advisory bodies. Nothing could be more futile than to imagine that prestissimo, as by the waving of some conjuror's wand, we can by mere virtue of good intentions effect a salutory reformation. No; rather with great care and unsparing trouble must the whole procedure quietly be thought out. The point is that, if we care to think it out, now we have breathing space in which to do it. But, however important, the question of war memorials is but one of the matters to deal with which this Association has come into existence. It is specifically the Civic Arts Association. That title suggests the broadest, the most serious possible apprehension of Art, and it suggests further the insistence upon such an apprehension of it as one of the obligations laid upon all faithful citizens, and specially upon all those who are in authority. That being so, of what happy augury it is that the Lord Mayor of London of all people should be presiding over the Association's first public meeting. That gives a benediction and a start which nothing else could. If such meetings could be held in other important places under the auspices of their various civic authorities what excellent results might follow! And now is the time for it. For the carrying out of the practical purposes of this Association much more is, of course, required than public meetings, however influentially supported. The work of the Association will depend not upon platform speeches, but, as all sound work does depend, upon the disinterested, intelligent, pertinacious energy of individuals inspired by large ideas and possessed of an inexhaustible store of tact, patience, insight, self-sacrifice, alert sympathy, yet the meetings have their justification, say rather, their necessity. For it is through them that ideas are set afloat in the public mind, gradually permeate it, become by and by part of its natural consciousness of what rightly should be. That is their function, their value, that and little more, but it is a value not to be exaggerated. The fundamental idea of civilised community life, whether in city, town, or village, implies the existence of authority, and authority implies order and co-ordination of interests, and these imply some reasonable restriction on the unfettered freedom of the individual. We recognise this in matters of health and of convenience. Confessedly we touch upon a more difficult matter when our concernment is with Art. Yet for the general public edification authority should have its say here, too; only authority tempered not a little, if one may so put it, with the spirit of persuasive instruction, of sympathetic reasonableness, an authority parental rather than, save in cases of incorrigible obstinacy, authority drastically official. He was no admirer of over-masterful civic organisation, or for the matter of that of over-masterful organisation in any department of life. However temporarily effective, it did not come of a fine understanding of men, nor tend to their betterment. But order, and the reasonable enforcement of order, are totally a different thing. In any community there is so much ignorance and selfishness that things cannot be left to drift at the mercy of individual carelessness or caprice. Our thoroughfares, the buildings that occupy them, the approaches to these buildings, their decoration, the advertisement of what purposes they serve, the disposition of fresh areas—that all these things and their like should tend in general impression to a sense of comely discipline, pleasantness, dignity is surely not asking too much. But, unfortunately, it is asking a good deal more than hitherto on the whole we have thought it necessary to ask. In the present moment of upheaval, when we are being compelled to reconsider so many old-established ways and set our house in order against the new world to come, this Association confronts and enforces upon us the thought of how we stand to Art in its civic aspect, and how, as intelligent, patriotic men, aware of its vital importance in a finely civilised community, we ought to stand to it. We shall do prudently to heed this admonition, and to heed it means to bestir our best practical wits on devising means for rendering it effective.

Professor W. R. Lethaby, F.S.A., F.R.I.B.A., Vice-president, asked was there any hope that a group of mere busybodies could accomplish anything of the kind the Association had in view? After all, most of the work of the world has been done by groups of busybodies, and most of that which is established first constituted itself. In America advisory committees on town improvements have been found to render very valuable help, and the tendency in New York, Boston, and other cities is more and more to depend on them for guidance in the things which are usually called matters of taste. It would be a lively thing if every town and village in Britain formed a committee of public welfare and every city had a society resembling the excellent London Society. But what was Art that our towns should bother about it at all? Art is many-sided and manifold; it is not only a question of high genius, that is only the crest of a great wave rising from gifted communities, and without the flood of common art you cannot have the crest of genius. This common art which is the thing of importance, as the other will form itself, is concerned with all the routine things of life—laying the breakfast-table, cleaning the doorstep, tidying up our railway stations, and lighting the High Street. Too much writing about Art, oversplashed with purple and dazzling with parodox seems to have entirely confused ordinary people. When you have divided up this common principle of Life in Work into Fine Art, Decorative Art, Architectural Art, art at the Mayfair Galleries and the art of Mr. Jones, the next step is to forget the whole business as being too technical—or, rather, to turn it over to specialists who say they know all about it. In much the same way Beauty has been ground to dust in contradictory theories of æsthetics. Indeed, some books on this simplest, sweetest thing, Beauty, must make the animals glad that they have not learned to read. Beauty, like breathing, is solved by doing it, not by this everlasting argument. Might one venture as an illustration to say that St. Paul must have found a similar difficulty with over-systematic discussions about Faith. "What I mean by Faith," he seems to say in a famous passage, "is—is everything." That, too, is what he (Professor Lethaby) meant by Art.

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Everything that was ever rightly done or made. By Art we live and move and have our being. If we have not Art we shall just perish. Art is cleanliness, tidiness, order, gaiety, serenity, mastery—the right way of doing necessary things. The Civic Arts are the arts of civilisation. The arts of civilisation are civilisation itself. Art enters into all things made and done. One should not worry about it if it were only a matter of shapes and colours and skill. But it is much more than all these. Beauty is a necessary function of health, and it is one of those few great things which sustain the spirit of communities. In the days before us we shall need to make use of all the sources of power we can draw on—historical continuity, pride of race, national spirit, love of home and civic patriotism. The Civic Arts mean more life and more to love. That country must be greatest that has the most to love. We have heaps of teachers, philosophers, politicians and economists, but none seem to understand that no nation can last without beauty.

Mr. George Clausen, R.A., said that both as an artist and a member of the Royal Academy he wanted to express his sympathy with the movement. He was glad to say that several members of the Academy, including the President, were similarly in sympathy. And he earnestly trusted that before long there would be held at Burlington House an exhibition of what is known as the Arts and Crafts, or of what one might call the domestic arts. It was not only appropriate but necessary that some such means should be taken of bringing before the public the great ability in this direction existing in this country. As everyone knew, the old handicrafts were extinguished owing to the introduction of machinery. But it was not so generally known that the impulse towards re-creating these ancient arts originated in England with a small band of men. And that, although our painting, our sculpture, and our architecture are looked on by artists of foreign nations as nothing out of the way, it is universally admitted that whatever is interesting and typical is to be found in this group of men who are reviving these arts. As a whole our people do not know the strength of the country in this respect.

Mr. J. St. Loe Strachey pointed out it was up to the Association to remember that just as there was nothing mean or pinchbeck in the heroism of our fallen soldiers and sailors, so we must see to it that there was nothing mean or pinchbeck in their rewards. Those memorials must be appropriate if they were to be worthy of the mighty dead. In the past, this country had been very remiss as to the art of inscription. It was to be hoped the forthcoming works of our artists would not be disgraced by empty or too florid inscriptions. In that connection it would be a great thing if our English men of letters were to form a committee of advice, for one vulgar word may spoil a whole inscription.

ROYAL DRAWING SOCIETY.

The annual general meeting of this Society was held in the Guildhall Art Gallery, by permission of the City Corporation, on January 21. The Lord Mayor (Colonel Sir C. C. Wakefield) presided.

Mr. Ablett, in the course of his annual statement, said the Council reported very satisfactory progress made during the year. The examination surpassed all previous records, 1,030 schools sending 63,830 candidates for the last June examination, not only from the British Isles but also from the Colonies and other parts of the Empire. The annual exhibition was the best show of work they have yet had. The Society's income has increased in spite of the war. Further, £200 has been added to the Reserve Fund, and the Society has subscribed to the National Relief Fund.

M. Paul Lambotte, Director of Fine Arts for Belgium, then gave an address in French on "The Value of Drawing." The supreme value of drawing and its preponderating importance in the teaching of the Fine Arts was, he said, a proposition upon which it is not difficult to arrive at unanimous accord. But its application, so far as pedagogic methods are concerned, arouses divergencies of view. He believed the method of instruction employed by the Royal Drawing Society should give the best results, for it teaches its pupils first of all *to see* and *to think*; it teaches them to utilise their faculties of observation and of visual memory, and also to understand the beauty of things so as to appreciate their rhythm and harmony, to evince, in knowing the why and the wherefore, that kind of emotion from which evolve fine works. This teaching has nothing rigid about it, it does not separate drawing from actuality, and further every appreciation of movement, of colour, of light on the part of the child is welcomed. So many schools start their teaching with uninteresting and discouraging study and with the drawing of colourless and motionless plaster casts, which must be copied in verisimilitude with a patience that has to be sustained for months. It is just as though to make children feel and admire the beauty of Nature one were to lock them up for six months in windowless rooms wherein they could only contemplate the dried and discoloured flowers of a herbalist.

The use of pastel for early studies, which safeguards respect both for form and for colour, cannot be too highly recommended. Transition from the touch of the stick of pastel to the viscid touches of oil paint or to the fluid washes of water-colour should easily be accomplished. Now, the Royal Drawing Society—its name sufficiently indicates as much—considers that drawing is at the base of all the plastic arts, that it is the Law and the Prophets. Therein he was entirely at one with its founder. Nevertheless he felt great fear of pedagogues who attempted to separate drawing from the two elements essential to its existence—namely, movement and colour. The exclusive cult of drawing shorn of those elements of life was always the fundamental error of schools which ended up in a frozen academism. Form is evidently the primordial element of all plastic interpretation, but it would be a strange lack of knowledge of the unity of Art that would see it immobile, colourless, deprived of the ambience of light, and denied either shadows or reflections. Even the sculptor himself cannot see form in its volume and its silhouette without at the same time seeing its colouration and the effects of light playing over its surfaces. In his work he has frequently to alter the direction of a plane in order to endow his work with such lighting as shall render it harmonious and intelligible. Some professors of drawing wilfully close the eyes of their pupils to everything which stands for expression, for colour, and for light, in order to make them discover the secret of immobile form. Later the eyes of these young people will be unused to seizing on the spur of the moment the really constituent elements of form, as they will fail to rid themselves of their conventional view, and convention in Art—you know whither that leads. One may ask oneself whether one has not to go back to Raphael to find at its source the principle of the divorce of form pure and simple from the elements which give it life. Perhaps one first saw engravings or photographs of the celebrated compositions which decorate the rooms of the Vatican, and only later the paintings themselves. Has not the enthusiastic admiration aroused by the monochromes suffered a sudden collapse in presence of their originals? Has one not felt that everything which should augment and enrich the effect of these compositions on the contrary does but impoverish them? Evidently Raphael was not endowed with colour imagination; his cartoons enchant more than his pictures. One regrets that he did not materialise his conceptions in the form of bas-reliefs or monochromes. There is no harmony of colour to lend charm to these paintings, in which light does not confer its magic. Without a doubt this stupendous draughtsman looked at form without stopping to consider its surface, set it down miraculously, but without feeling, without marvelling at its ceaseless game of hide-and-seek with the light. His most suave virgins never allow one to forget that it is the composition

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drawing of the work which alone matters, but that over this admirable form the clothing of colour is arbitrary and indifferent. No adequate search for the refinement of tone, no eloquent choice of lighting effect elevates it. It is only in his portraits that Raphael, ceasing to compose in his frigid manner, suddenly warms up when copying from Nature surface forms animated and varied in colour by the light of day. It is then that he surpasses himself, because he demonstrates himself an artist *complete* in the receptivity of his sensitiveness. Raphael was a man of genius, and genius even in its faults and its prejudices is always persuasive. But the school which followed his methods was doomed to an irremediable weakness. It was the initial failure of academism. In the nineteenth century in France, David and Ingres tried to isolate immobile form from all the influences of life. The power of their talent enabled them to accomplish outstanding works done after their own exclusive formula. The exact draughtsmanship of immobile forms upon which, as with David in his historical pictures, one fitted costumes of one colour or another, does not seem to be drawing as it should be understood by modern artists for whom movement, colour, light, in a word life, appear to be the criterion of a masterpiece. Young people who have received their instruction from the Royal Drawing Society will be well armed for expressing in form their visions and their conceptions. Each remaining free to pursue his personal researches in conformity with his own nature will realise, without striving for it, all his individuality. They may become painters, sculptors or decorators, mechanical draughtsmen, or illustrators. All will have learnt to see Nature, to register their impressions, to develop their visual memory, to clarify and to set down their conceptions. Those of them who give up Art work for Art criticism will be no less well prepared—rather the contrary. And perhaps finally, whilst we wish for the development, the ripening and the triumph of all the young talents who have passed or will pass through the schooling of the Royal Drawing Society, may we hope that some of them will enter on the career of literature and will take up the Art education of the public?

The Lord Mayor said they had been delighted with the beautiful address just given. The audience would carry something away with them which they will keep for a good many years. He had always been greatly interested in the work of this Society, especially in snapshot drawing. There is no doubt about it that this Society develops the knowledge of Art just at the plastic period of one's life, and develops the imagination. In the English character we have very great qualities, but if we lacked one thing we lack imagination; and it does seem that if in the plastic period of a child's life you develop imagination you develop the love for the beautiful. If along with it you give quickness of observation, and that rapidity of decision which is so helpful later you are bringing into the child's life a wonderful asset.

Sir John Cockburn, in moving the adoption of the Annual Report, said the work of the Society was miraculous because it is conducted on the true lines of Nature. It wants to bring up the youth of this country to have the seeing eye, a sympathetic and helpful hand, and in order to do that the child must be brought into touch with Nature; he must be taught to observe. The whole of true education is simply bringing the child into touch with its environment, and how can you do this if it does not know what its environment is, and if it goes about merely seeing with the eyes of the past and does not probe into the beauties and mysteries of Nature? Every child is a genius, as Mr. Ablett shows, until we quench the fire and destroy the imagination which it naturally has. If you will remove the restraint on the imagination in the ordinary school, you will have done everything that is necessary to preserve throughout the whole of life that genius which is the natural inheritance, which is the prerogative of the child.

Mr. A. G. Temple, F.S.A., in moving a vote of thanks to the Lord Mayor, said it was the tenth time that the annual meeting of the Society had been held in this Gallery. The present Lord Mayor loves Art for its own sake, but in addition he is in that enviable position of being a patron of Art, and in that capacity he has surrounded himself with choice treasures.

Lieutenant Roderic Hill, in seconding said the meeting was very interesting and most notable; it included a representative of the Art of our noble ally, Belgium. His most illuminating point was perhaps the importance of going straight to Nature, to her secrets, and not to allow the dry and academic drawing from stiff things like casts to block the way of the student.

TRAP DOORS ON STAIRCASES.

In a paper read before the Caradoc and Severn Valley Field Club at Shrewsbury, on "Trap Doors on Staircases." Dr. M. Gepp said:—

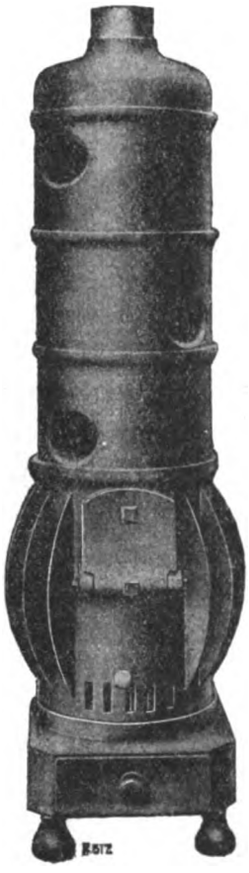
The subject of trap—or perhaps better named flap—doors on ancient staircases is a small one, but one which is quite new to me, and probably to most of us, and is I think of general interest as throwing light upon domestic customs and dangers in old times, and worthy to be borne in mind in the investigation of old houses, especially in the case of farmhouses and the smaller country houses in our own county. I cannot pretend to have any first-hand knowledge of the subject, and merely quote from descriptions and comments which have recently been printed in the "Notes and Queries" pages of the "Essex Review."

In the issue for July, 1915, the Rev. Edward Gepp, of High Easter, described an ancient staircase as follows:—"In an old farmhouse in this parish the staircase leading from the ground floor to the first floor is so arranged that the whole opening on the first floor level can be closed by a wooden flap, bolted from above. The flap, of stout inch deal strengthened by cross pieces, measures 5 feet 8 inches by 3 feet. The back stairs, now removed, had the same arrangement; and another farm close by had once a similar flap. What was the object? The ordinary explanation that it was for protection from thieves does not seem satisfactory. Who would leave his lower premises to be raided, and secure himself above from the common thief? Is it not more likely to have been for defence in times of violence, protection against an armed attack? I daresay there are many more examples, but I can only hear of these two."

In the following October issue appeared some very interesting answers and comments by four writers. Mr. H. W. Lewer, writing from Loughton, Essex, says:—"Thomas Tusser, the Essex poet of husbandry, in his 'Five hundred points of good husbandry' (1573), answers the first part of the Rev. E. Gepp's query. In his doggerel verse 'After supper matters' we obtain a vivid picture of the insecurity of the times, and the precautions taken by the husbandmen at night before retiring to rest. This illustrates clearly that trap-doors were in common usage during the sixteenth century, and there is little doubt for many years after. I can add to the two examples Mr. Gepp mentions:—(1) The house in which I reside; and (2) perhaps one of the largest in the county is to be seen in the old house of the Wiseman family, Broad Oaks, Wimbush."

Mr. T. L. Wilson, of Upminster, Essex, writes:—"In response to the Rev. Edward Gepp's request in the 'Essex Review' for July, for any information beyond that to which he refers respecting closing flaps at the top of staircases, I can say that I well remember such a case at Hill Place, Upminster. Here the old staircase, which was at the N.W. corner of the house, ascended northwards for about half its total height, and, reaching the north wall, turned at a right angle eastwards; it was over this later half that there was a large flap to open towards the wall where it was temporarily

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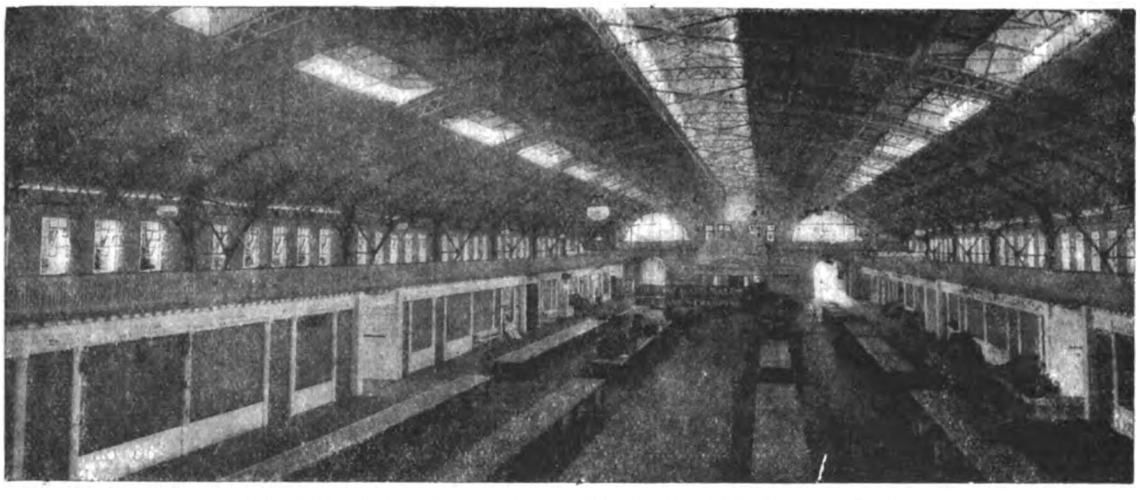
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secured when not in its intended resting place over the only open space between the two floors. I believe this old flap remained until 1861, when Hill Place underwent extensive alterations involving the outlay of several thousands of pounds."

The next and very interesting account is given over the signature of A. M. Broadhurst, Rivenhall Place:—"There is a staircase similar to that described in the 'Essex Review,' of July last, at Broadhurst Manor, in the parish of Horsted Keynes, Sussex. It is the only one of its kind I have ever seen, or had ever heard of until I read the description of one at High Easter. Broadhurst Manor is now used as a farmhouse, and the present and picturesque building, with its fine old chimneys, dates from about the fifteenth century, although its history goes back some centuries further. I do not know the actual date of the staircase, nor its measurements. It is of oak, black with age, and has on each floor a large oaken flap, which when raised has the appearance of panelling on the wall, but which when lowered closes completely over the stairs, and forms, as it were, part of the floor above. By this means access to the upper floors can be entirely cut off. When I saw them, some thirteen years ago, the flaps had, I think, great iron bolts which could be shot from above, so as to prevent the flaps from being forced upward by anyone on the staircase below. When the flap is raised, the iron fastening is of course concealed between it and the wall against which it rests like panelling. As a means of defence this arrangement was doubtless of considerable value, provided the pursuers were not given time to burn or starve those above into surrender. The flaps are said to have been used for this purpose by Robert Leighton, formerly Bishop of Glasgow, who lived in retirement with his sister, Mrs. Sapphira Lightmaker, at Broadhurst Manor, and died there in 1684."

The writer goes on to show that it is perhaps more probable that they have been used for the protection of Mrs. Lightmaker's father, who was a Scotch Presbyterian, and having published a work entitled "An appeal to the Parliament," or "Zion's plea against Prelacy," was condemned to severe punishment by the High Commission Court, and died in 1644 after release from prison.

Lastly, Mr. Stephen J. Barns, writing from Troting, Woodford Wells, Essex, says:—With reference to the query of Rev. E. Gepp in the last issue, it may be that the following from the pages of the Loughton "Parish Magazine" of about 1891 will afford some explanation. Commenting on an account of a highway robbery in the parish in 1752, the writer goes on to say:—"The traditions of the highwaymen lived on well into this century, and there are yet some in Loughton who remember when Turpin traps still existed in certain houses. They consisted of flaps which were let down over the staircase head and kept there by a pole set against the ceiling, so that they could not be raised by anyone from below."

It seems clear that an arrangement of this kind could only be used where the staircase was of comparatively simple design. You are no doubt all familiar with instances in modern houses where a steep flight of steps, or a ladder, gives access from the cellar to the ground floor, or from an upper floor to a loft, the opening being covered by a flap or trap level with the floor. I have seen such ladders in church towers in this county with hinged traps at the top to be pushed up as one ascends. These are all instances of an arrangement for securing economy of space where convenience and appearance are necessary. No doubt the arrangement varied somewhat, but the design must necessarily have been simple. As regards the staircase at High Easter, mentioned by my brother, I have asked him for further information, and he tells me that the house appears to be of the seventeenth century, and the stairs are one short straight flight occupying the space given in his query, or perhaps more. The flap covers this space. It is hinged on to the right hand wall at the top of the stairs, and when lowered is on a level with the upper floor. There are no banisters, he says, but a close wall or partition on each side. There is very little landing space at the top, enough only to set foot on. In the case described by Mr. Wilson, at Upminster, the staircase has two flights at right angles, and hugging a wall on each flight. My brother gives the dimensions of the flap as 5 feet 8 inches by 3 feet. I have measured a flight of stairs in Shrewsbury, of about the same width, 3 feet, and find that the opening on the floor above must be approximately 6 feet long to give convenient head room to one ascending, where the flight is somewhat steep: with a more easy ascent the opening and the flap must needs be considerably longer.

In the instances I have given we have it suggested that the defence was intended against the common thief, or raids by highwaymen, or personal attack or persecution. Shropshire was not always a peaceful county, and though highwaymen were probably not so active and aggressive as in the neighbourhood of London, we must have had the common thief often among us. Shropshire is well stored with good old farmhouses of the sixteenth and seventeenth century, which have probably suffered as little change as any in the country, and its husbandmen must have been warm men as well provided with money and liftable treasure as any others. It seems likely that they would value a defence of this sort. No doubt such staircases were in some degree inconvenient, and even dangerous of approach from the top, and in many cases would be cleared away in later days. But one would expect that some actual instances or traces would remain. It would be interesting to discover them. The view that a trap door or flap, such as is described, was a good defence against a hurried night raid by foot thieves or mounted highwaymen seems plausible. Portable objects of value, including money, would in the case of farmhouses in those days be comparatively few and small, and easily kept or carried upstairs at night, leaving only solid and unportable articles of furniture below. Larger houses and mansions, whose stately staircases would not be closed in the way described, depended no doubt for defence on heavy doors or shutters, with bolts and bars, and on a more numerous guard, and better arms.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Errata.—St. Mogue or Aidan.

SIR,—In my sketch under this heading in your valuable issue of January 28, 1916, a few discrepancies have crept in—viz., "his father Ethra" read "his father Sedna"; for "Ris" read "Rig"; "Laoerein" read "Laserein"; "Archæogine" read "Archæologia."

Your correction of same as above would oblige.—Yours, &c.,

J. H. M. MCGOVERN.

41 North John Street, Liverpool: January 31, 1916.

MR. CHARLES FREDERICK MITCHELL, who was headmaster of the technical day school of the Regent Street Polytechnic for twenty-five years, has died at the age of fifty-six. He had been head of this special section since its formation, and was associated with the Polytechnic from its earliest days when it was founded by Mr. Quintin Hogg, in Endell Street. He will be remembered by builders and students of architecture through his text-book on "Building Construction for Elementary and Advanced Students." His brother, Mr. Robert Mitchell, is Director of Education.

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(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BUCKINGHAMSHIRE.

Amersham Common.—Cottage, for Mr. A. Sanders.

CHESHIRE.

Stockport.—Factory. Mr. T. P. Marwick, A.R.I.B.A., architect, 43 York Place, Edinburgh.

Tarporley.—Building, Eaton Road, for Mr. J. B. Wheat.

CUMBERLAND.

Bradwell.—Isolation Hospital: extension (£1,000).

DORSET.

Weymouth.—Maisonettes, Wyke Road. Mr. S. Jackson, architect, Bridge Chambers; also
No. 3 Coburg Place: rebuilding.

ESSEX.

Burnham-on-Crouch.—Two bungalows, Mill Road, for Mr. Slaughter.
Workshop, Station Road. Mr. Stanley Read, builder.

Chelmsford.—Offices, Duke Street and Market Road, for the Prudential Assurance Company, Ltd.

Romford.—Proposed secondary school for boys.

HERTFORDSHIRE.

Hatfield.—Business premises, St. Albans Road and Ground Lane, for the St. Albans Co-operative Society.

LANCASHIRE.

Accrington (near).—Church (£6,000) at Church.

Blackpool (near).—Wesleyan Church, Thornton: extensions.

Cadishead.—Two houses, Penry Avenue, for Mr. T. Mosedale.

Fleetwood.—Wesleyan Mission Church, rear of Elm Street: addition.
Strawberry Gardens Hotel, Poulton Road: alterations, for Messrs. Catterall & Swarbrick.

Lancaster.—Central Buildings, New Street: alterations, for the Lancaster and District Co-operative Society, Ltd. Mr. R. Jackson, architect, 32 Market Street.

Manchester.—Masonic Hall, Bridge Street.

LINCOLNSHIRE.

Skegness.—Convalescent Home. Mr. P. B. Houfton, architect, Furnival Chambers, Market Place, Chesterfield.

NORTHUMBERLAND.

North Shields.—Infirmary, Tynemouth: extensions. Mr. J. W. Meadows, architect.

NOTTINGHAMSHIRE.

Mansfield.—Tin Works, Rock Valley: motor garage, for Messrs. Barringer, Wallis & Manners, Ltd.
The "Nag's Head" Hotel: additions and alterations, for Messrs. J. Shilstone & Sons, Ltd.

SOMERSET.

Taunton.—Warehouse: alterations, for Messrs. W. Thomas & Co., Ltd. Mr. E. Sprankling, architect, 16 Hammet Street.

SUSSEX.

Bognor.—House, Nyewood Lane, for Mr. A. Adlington.
House, Bassett Road, for Mr. T. Freed.

WARWICKSHIRE.

Bedworth.—P.M. Schools (£1,600).

YORKSHIRE.

Bradford.—War Hospital: extension (£15,000). Mr. Holland, architect.

Easingwold (near).—W.M. Church, Whenley.

Halifax.—Confectionery works. Mr. W. W. Longbottom, architect, Somerset Chambers, George Street.

Hull.—Oil mills, Wilmington, for British Oil and Cake Mills, Ltd.
Premises, St. Andrew's Dock: additions, for the Kingston Steam Trawling Company.
Nos. 1 and 2 Post Office Row, Marfleet: additions, for N.E.R. Company.
Premises, Stoneferry: additions, for Hull Oil Manufacturing Company.
Premises, St. Mark's Square: additions, for Messrs. Smith & Nephew, Ltd.; also
Nos. 101 and 103 Hessle Road: alterations; also
Premises, Tadman Street: alterations.
Shops and offices, Jameson Street, for Mr. A. Barker.
Premises, Prospect Street: alterations, for Messrs. Thornton, Varley & Co.
Workshop, King George Dock, for Earle's Shipbuilding Company, Ltd.
Premises, High Street: alterations, for Messrs. Rayment & Sharp.

Leeds.—The Yorkshire Village Library, Vernon Road: alterations. Messrs. A. Marshall & Son, architects, Estate Offices, Otley.

Sheffield.—Two hundred and sixty (or more) Council houses (£86,500).
S.A. Hall, Church Street.

WALES.

Burry Port.—Public slaughter-house.

SCOTLAND.

Duns.—House, Teindhill Green. Mr. J. J. Cowper, builder, Newtown Street.

Glasgow.—Warehouse, Netherton Works, Anniesland: extension, for the Ioco Proofing Company, Ltd.
Works: extension, for the Fairfield Shipbuilding and Engineering Company, Ltd.

IRELAND.

Dublin.—Offices, Suffolk Street, for the Atlas Assurance Company, Ltd. Messrs. O'Callaghan & Webb, FF.R.I.A.I., architects, 31 South Frederick Street.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 21,976. Nov. 4, 1914.—Walter Jones, J.P., and Jones & Attwood, Ltd., Titan Works, Amblecote, Stourbridge. Purification of sewage and analogous liquids.

23,411. Dec. 2, 1914.—J. J. Owen, 14 Princes Road, Liverpool. Seasoning timber.

1,858. Feb. 5, 1915.—E. S. Dupree, 26 Watery Lane, Merton Park, Surrey. Fittings for spring roller blinds.

3,095. Feb. 26, 1915. H. S. Valentine, 91 Fotheringay Road, Maxwell Park, Glasgow. Gas fires.

3,255. March 1, 1915. William Hensman, 31 Elborough Street, Southfields, S.W. Fire escapes.

3,631. March 6, 1915. E. J. Larkum, 115 Gleneagle Road, Streatham, S.W. Draining boards for use with sinks.

6,183. April 26, 1915.—James Lockett, 2 Whittle Street, Swinton, Manchester. Safety device for safeguarding the working of lifts and hoists.

7,240. May 14, 1915.—W. T. Kenman, 19 Fishamble Street, Dublin, and John Hillis, 79 Donore Avenue, South Circular Road, Dublin. Sliding windows.

9,139. June 22, 1915.—Chas. Pattinson, 26 Valley Parade, Hanningham Lane, Bradford. Glazing of roofs.

11,247. August 4, 1915.—A. A. Buss, of Felber, Jucker & Co., Ltd., 29 Peter Street, Manchester. Means for and method of covering roofs, walls, or the like with corrugated or other overlapping sheets.

12,005. August 19, 1915. (Dated under International Convention, Sept. 9, 1914.)—E. I. Propper, Bienne (Canton of Berne), Switzerland. Artificial stone for hollow walls.

Any of the above specifications may be obtained from J. D. Roots & Co.

MR. T. W. WOODRUFF has been elected Surveyor to the Dover Rural District Council out of 160 applicants, in place of the late Mr. Sargent. Mr. Woodruff recently acted as clerk of the works on the building of the East Kent colliery village.

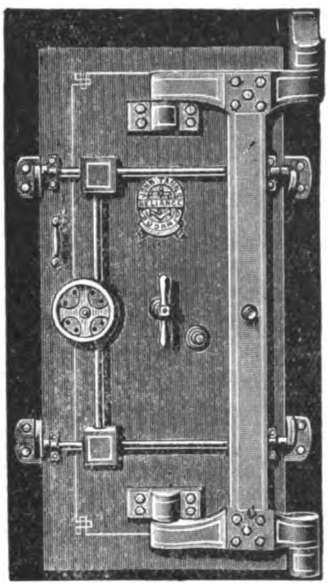
THE Incorporated Church Building Society held a monthly meeting on the 20th ult. Grants of money were made towards building new churches at Cwmbran, St. Gabriel, Llantarnam, Mon., £175, and Preston, St. Cuthbert, Lancs., £125. A grant of £20 was also made towards reseating and repairing the Church of St. James, Newton, Cambs. Grants were also paid for works completed at Shoreditch, St. Michael, Middlesex, £25; Salisbury, St. Mark, £75; and Lambeth, Holy Trinity, Surrey, £50. In addition to this, the sum of £332 was paid towards the repairs of eighteen churches from Trust Funds held by the Society. The Society likewise accepted the sums of £500 and £200 respectively as repair funds for the churches at Stanley, St. Paul, Liverpool, and Charnock Richard, Christ Church, Lancs.

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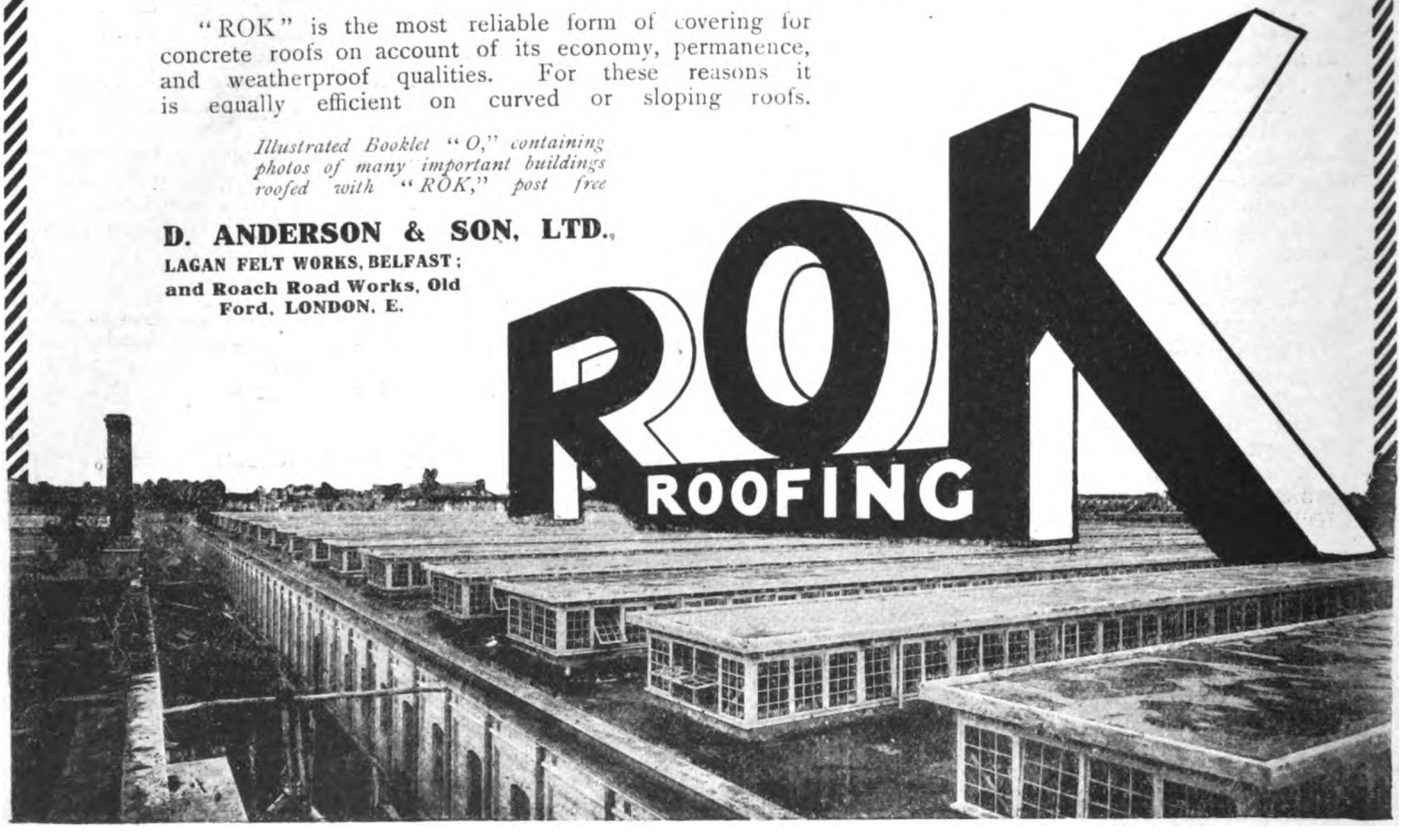
"ROK," the British Roofing.

THE entire roof of the vast building of the Barnagore Jute Co., Bengal, illustrated below, is reinforced with "ROK" Roofing—over 600,000 square feet being used.

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THE ARCHITECT

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FORTHCOMING EVENTS

Friday, February 11.

London and Middlesex Archæological Society: Annual meeting at Bishopsgate Institute at 5.30 P.M.

Royal Institution: Paper, entitled "Egyptian Jewellery," by Professor Flinders Petrie, at 5.30 P.M.

Monday, February 14.

Royal Society of Arts: The second of three Fothergill Lectures on "Flemish Architecture," by Rev. Dr. Herbert West, D.D., A.R.I.B.A., at 4.30 P.M.

Victoria and Albert Museum: University Extension Lecture XVII. on "English Renaissance Architecture (1500-1900)—Famous Elizabethan Mansions," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Tuesday, February 15.

Nottingham and Derby Architectural Society: Paper, entitled "Quantities and Accounts," by Mr. W. R. Gleave, A.R.I.B.A., at 6.45 P.M.

Wednesday, February 16.

Concrete Institute: Paper, entitled "Reinforced Concrete as Applied to Waterworks Construction," by Mr. C. F. Marsh, M.Inst.C.E., &c., at 5.30 P.M.

Carpenters' Hall: Lecture, entitled "Some Movements in Modern Art," by Mr. William Strang, LL.D., A.R.A., at 7.45 P.M.

Thursday, February 17.

British Museum: University Extension Lecture XVIII. on "Roman Architecture (B.C. 100—A.D. 300)—Triumphal Arches, Town Gateways, Pillars of Victory," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

A FAIR FIELD FOR BRITISH INDUSTRY.

THE report of the sub-committee of the Advisory Committee to the Board of Trade on Commercial Intelligence should be epoch-making, since it realises with accuracy and completeness the nature of the handicap to which British industry is subject in its competition with foreign manufacture, and especially that of Germany. Briefly, the situation may be summed up in a single sentence—the German manufacturer receives every assistance that the German Empire can give him; the British receives none. In Germany it is recognised that each individual manufacturer or trader is an asset to the nation. In our own country he is regarded as unworthy of encouragement and of no particular benefit to anyone but himself, except as a taxpayer. Instead of being encouraged and assisted, he is hampered in every way by social legislation as a fearsome beast who must be stinted in his provender.

The branches of industry to which the sub-committee directed their inquiry were: Paper manufacture, the printing trade (including colour printing), the stationery trade, the jewellers' and silversmiths' trade, cutlery, fancy leather goods, glassware (including table glass, laboratory ware and glass bottles), china and earthenware, toys, electrical apparatus (including magnetos), brush &c. trade, and hardware. Only a few of these directly concern architecture and the building trade, but the position we take is that everything that concerns the prosperity of the nation is of importance to the art and industry with which we are more immediately connected. Hence the prosperity of British industry as a whole is of interest to our readers.

We hope that before the end of the war a committee of the Board of Trade may take into consideration German exports and German-owned inventions and processes immediately affecting the building trade; as, for example, waterproofing media, paints and fire-resisting construction, with which our market has of late years been flooded.

The most subversive of the sub-committee's recommendations is, perhaps, that relating to tariff protection, and it is, possibly, the most important. Tariff protection of home industries does not necessarily mean higher home prices. What it does mean is increased production, and from this follows lessened cost of manufacture. A production sufficient to provide for the home market and for export trade at lower cost to make the export trade economically possible. Security is what our manufacturers want. If they are secure in their home market they can develop any industry, and, using the protected area as a base, can develop an export trade. But if they are not secure in their home market, what chance have they against the German manufacturer who has that security? The handicap is too heavy.

Another recommendation of the sub-committee which we regard as of very high importance is that "joint-stock banks should be invited by the Government to consider the possibility of affording a greater measure of assistance to British industrial enterprises." The comment of the "Morning Post" on this expresses our view also: "The British bankers' reply was given by Lord Inchcape last week: 'It would be a betrayal of our trust if we were to invest the funds of depositors in undertakings of an industrial or speculative character with a view to earning larger dividends for ourselves.' Let us consider what these words mean. They mean that in the opinion of Lord Inchcape 'industrial' and 'speculative' enterprises are on the same level. Industries in this country are not a secure investment. But they are (or were) a secure investment in Germany. The German banks have sunk enormous sums in German industries. Indeed, we understand that British banks have been accustomed to lend money to German banks, and that these banks have used that money for investment in German industries. The British capital that has gone to build up the German industrial system is refused to the British industrial system. Why? Because the German industrial system was secure: it was protected by the national tariff."

We may add to the "Morning Post's" comment that German banks were supported by the German Government with the whole weight of the credit of the German Empire. If our joint-stock banks are not to receive similar support in the financing of British trade, and still maintain their present attitude, we must have industrial banks founded which will provide for British industry that financial assistance which has enabled the German to be bold in manufacturing and commercial enterprise.

Perhaps next in importance comes the sub-committee's recommendation with regard to transport facilities. This includes the setting up of an impartial tribunal to secure that no preference is accorded to traders in other countries by British shipping companies or shipowners, or by home railways; at present it is notorious that German manufacturers are especially favoured by light freightage charges. The Rhine provinces, for example, can obtain china clay from Cornwall at lower cost than our own Staffordshire potteries.

In connection with traffic facilities, we are glad to note that the sub-committee advocate that "a definite policy for the improvement and extension of the canal system of the United Kingdom should be formulated, with a view to its being carried out so soon as the

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national finances shall permit." We have previously pointed out in "The Architect" the greatly superior advantages foreign canal systems provide for the Continental competitors of our manufacturers. Improved canals are of specially vital importance to the building trade.

With the sub-committee's recommendations regarding scientific industrial research and training we are completely in accord. They are grouped under three headings:—

(*a*) Larger funds should be placed at the disposal of the new Committee of the Privy Council, and also of the Board of Education, for the promotion of scientific and industrial research and training.

(*b*) The Universities should be encouraged to maintain and extend research work devoted to the needs of the main industry or industries located in their respective districts; and the manufacturers engaged in those industries should be encouraged to co-operate with the Universities in such work, either through their existing trade associations or through associations specially formed for the purpose.

(*c*) An authoritative record of consultant scientists, chemists, and engineers, and of persons engaged in industrial research, should be established and maintained by some suitable Government Department, for the use of manufacturers only.

Many other points connected with the efficiency of British trade in the world-war for commerce were considered and reported upon by the sub-committee. Trade exhibitions, for example, it is recommended, are to be so managed and controlled that they would be business exhibitions not Agricultural Hall shows, at which the trade exhibition is too often eked out or even swamped by attractions for the general public of the country fair variety.

A weak point up to the present in British commerce has been the insufficiency and ineffectiveness of its outposts. We are glad to see, therefore, that the sub-committee has recommendations to make in this direction. The Consular Service is to be reorganised—and it needs it; its officers are to be watchdogs for infringement of British trade-marks, and other unfair practices, it is to be more useful to traders, not, we hope, as we have personally found it, a mere bureau for the passing of manifests, but a source of information for the British man of business. Preferential treatment is to be sought for the advance guard of British trade, catalogues and commercial travellers, in the self-governing Dominions and the Colonies of the British Empire.

The establishment of a Ministry of Commerce charged solely with the safeguarding and extension of British industry and trade, is, we think, very desirable. The Board of Trade has too much on its hands to properly carry out all the tasks at present imposed upon it, and the new Ministry recommended should be freed from the regulative duties in respect of railways, shipping and harbours, and the duties in respect of labour, which at present devolve upon the Board of Trade.

It must be admitted that Sir Albert Spicer is justified in characterising the recommendations of the sub-committee as advocating the institution of a piecemeal tariff for subsidiary industries, but we cannot regard this as a reason for delaying the whole matter. It is surely better to try the experiment of a protective tariff on subsidiary industries rather than upon major. Besides, the industries dealt with embrace at least two "key industries," optical glass and magnetos, and others in which the German predominance has become so pronounced as to render it the height of foolhardiness for manufacturers to lay down plant and lay out capital without some security for a fair field in their struggle against Germany, in what, we trust, may be the near future. The protection which Sir Albert predicates as equivalent to import duties, likely to be afforded by the prejudice against German and Austrian goods, is of a very illusory nature. German and Austrian goods are to-day being extensively sold in retail trade, partly through the carelessness and ignorance of the everyday customer, partly through the attractiveness of low prices. When, after the present war, bargains in dumped stocks will be lavishly offered by enemy competitors, no prejudice will be sufficiently strong to provide our British manufacturers with sufficiently effective protection.

ROYAL EXCHANGE, CALCUTTA.

THE foundation stone of the Royal Exchange Building in Clive Street, Calcutta, was laid this week by His Excellency Lord Carmichael. Our illustration shows the successful design submitted by Messrs. Stevens, Gregson & Co., of Bombay, in a competition arranged by the Bengal Chamber of Commerce. The assessor was Mr. John Begg, F.R.I.B.A.

On the ground floor, the Royal Exchange Hall occupies the whole of the centre of the building, and is approached from a lofty entrance loggia facing Clive Street, whilst a subsidiary entrance on the south gives access from China Bazar Street. In this latter entrance is placed the main public staircase and the lift for the upper floors. Flanking the entrance from China Bazar Street on either side are placed the Indian Brokers' Room and the Brokers' Exchange. On the north side of the Exchange Hall is the Arbitration Room and the Post Office, whilst the members' staircase with entrances from both these has also access from the main Clive Street loggia, and also the Royal Exchange Hall.

A godown and servants' latrines are provided at the rear of the building.

On the mezzanine floor and leading off the members' staircase is the reading room and restaurant, the latter having the requisite amount of kitchen accommodation placed at the north-east corner.

The central portion is again occupied by the other portion of the Royal Exchange Hall, a gallery being provided at the western end.

A committee room, arbitration room and office, with retiring rooms, are grouped along the China Bazar Street side.

The first floor central portion is occupied by the public hall, entered from a crush hall at the head of the main staircase.

On the northern side of the building are placed the Chamber offices with the necessary accommodation for the secretary and his assistants.

On the China Bazar Street side are grouped a series of committee rooms and retiring rooms.

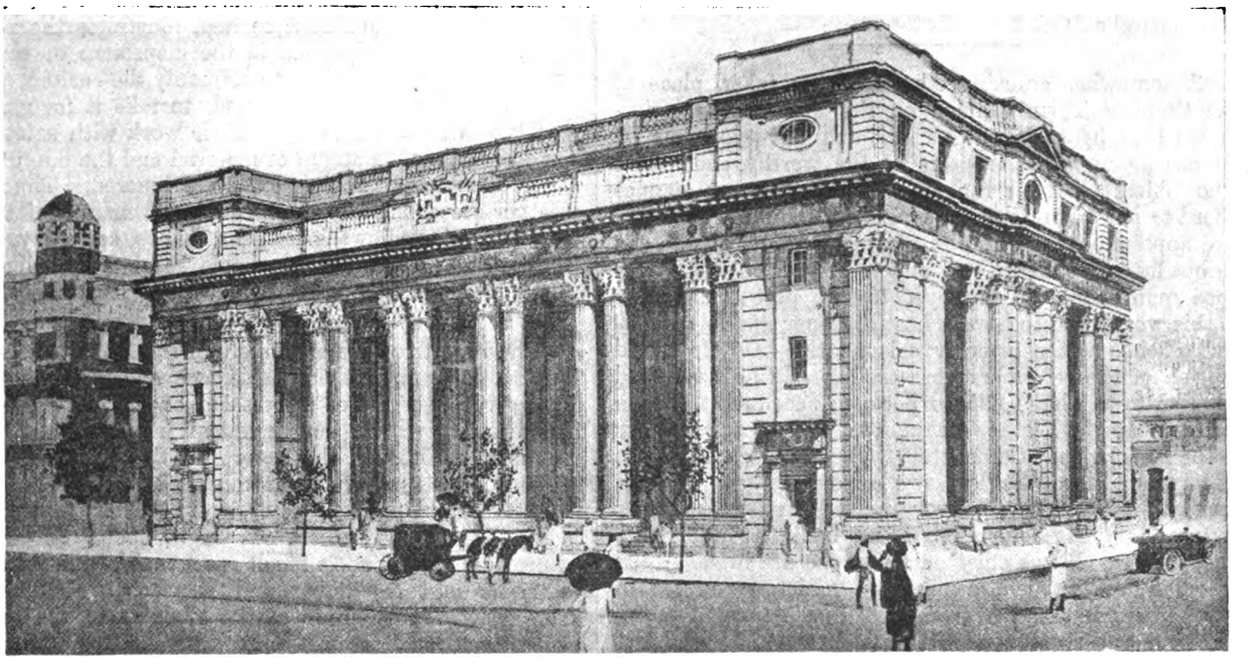
On the second or top floor, the whole floor (with the exception of the central space required for lighting the public hall) is given over to office accommodation—this is to be utilised by the Chamber or let separately as desired.

Above the godown, and connected with the main building at each respective floor, are placed the necessary servants' quarters, printing press rooms, tiffin room and lavatories.

NOTES AND COMMENTS.

DUBLIN CORPORATION is still struggling with the Government for money for building houses for the proper accommodation of the working classes of the city, and has succeeded by direct application to the Treasury in obtaining from Mr. McKenna the admission that, although the amount provided for loans during the current year was very nearly absorbed, if the Corporation was legally and irretrievably committed to the purchase of sites before the suspension of loans was decided upon he agreed that they had a strong claim to assistance. As regards the three cases referred to by the Corporation, the Treasury, he said, had not been notified that the approval of the Local Government Board, which was an antecedent condition, had been obtained; but as it had been obtained with regard to McGaffrey's estate the amount required

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Messrs. STEVENS, GREGSON & Co., Architects.

THE ROYAL EXCHANGE, CALCUTTA

in that case—£3,341—would be found. There should be no difficulty, he thought, with regard to the £6,000 required in respect of the Spitalfields case if the Local Government Board approved, but the other cases must stand over pending the decision of the Local Government Board with regard to them. If their approval was obtained, he would see what could be done, but the amount of the loan in each case must be restricted to the sum required to meet the Corporation's legal liabilities, no loan being made at present for demolition or building.

In a lecture on "Some Difficulties of the Housing Problem, and some Attempts to Solve it," Dr. P. C. Cowan, Chief Engineering Inspector to the Local Government Board, after pointing out that one real difficulty is that many of the poorer workers have wages of less than 20s. a week, gave some particulars of the statistics of small houses and tenements. In 1911 the approximate numbers, per 1,000, of families living in single rooms were: In England and Wales, taken as a whole, 32; in Ireland, 64; in Scotland, 125. The worst local figures in the three kingdoms were:—In Finsbury, 277 per 1,000; in Dublin, 340 per 1,000; in Coatbridge (near Glasgow), 273 per 1,000. With a similar population, Scotland has more than twice the number of single-roomed houses that there are in Ireland. It is, of course, evident that there is a limit somewhere to the help which the community can extend to the individual by bearing for him what appears to be his natural burdens. If that limit is passed, the public funds from which he is assisted would tend to dry up or be exhausted, and those assisted demoralised. The best form of help is the provision of some benefit of which the working men do not sufficiently appreciate the need, such as education or better housing. Such help does not impair the efficiency of labour in the way the gifts of meals or money would. There are plenty of precedents for the control of incomes by the Government. The results of some recent legislation have been in some ways very disappointing. Mr. Shelton, of Nottingham, states that practically 98 per cent. of the small houses in England have been built by private enterprise; that every week 1,500 to 1,600 houses are required to meet the normal growth of the population, and at least 600 more to replace worn-out dwellings; that in the ten years before the passing of the Finance Act, 1910, 111,300 houses per annum were erected, but in the four years following the passing of the Act only 78,000 per annum were built. This result is very regrettable, and it is to be hoped it is only transitory, as one of the clear intentions of the Act was to improve the condition of the working classes.

On the other side of the picture the lecturer gave information on some of the attempts that had been made to deal with the housing problem. This, he said, was hard enough before the war. Now any attempt at solution on a large scale is out of the question without special aid from the State; but it must be remembered that the ability of the State is greatly lessened on account of the unprecedented demands of the war. In Dublin and many other places, even if the land was given free for houses, they could not be let at economic rents within the means of the tenants. Dr. Cowan quoted a recent scheme in Dublin in support of this contention, and said other cities had the same experience. Other perplexing difficulties were for whom to build and where to build. In Liverpool it was found that, although numerous schemes were carried out, the people who lived in slum areas which were cleared were not benefited, and the Corporation were obliged to apply themselves to the problem of housing the poorest poor. They realised that it was a question of poverty, and that the best solution was to build, for the people turned out, on the spot where they were turned out, and to let the houses at rents which they could pay. The result of this policy had been extraordinary. Up to the end of 1913 the city had spent £1,135,000, involving an annual charge of £22,700, or 1½*d.* in the £ on the rates. Eight thousand one hundred and three people who had been turned out of insanitary houses and cellars were rehoused at rents approximating to what they had been paying before. Birmingham, on the other hand, resolved to confine their energies to the acquisition and development of land suitable for the erection of houses by private enterprise. In Irish cities and towns, and especially in Dublin and the adjacent townships, good examples of improved working-class houses provided by the sanitary authorities were to be found. The munificence of Lord Iveagh towards housing, and the wisely-guided activities of the Dublin Artisans' Dwellings Company, a company founded mainly on a philanthropic basis, are specially notable. In Cork 420 pleasing and suitable houses have been erected by the Cork Improved Dwellings Company, who,

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by careful management, are able to pay 5½ per cent. to their shareholders.

A somewhat amusing discussion has taken place at the Conway Town Council on the numerous appointments held by their Town Clerk and Surveyor, but we do not agree with the views of the worthy councillors who object to the arrangement. If Conway cannot afford to pay more than £5 a year for some of the lucrative appointments in its gift, it is obvious that there can be but little work attached, and it is surely better that a good man should be employed to give part of his time to this work than to have a host of minor and less qualified officials at the princely salary paid. It was stated by one of the reformers that the Town Clerk received £200 as town clerk, £25 as borough accountant, £5 as secretary to the Library Committee, and £5 as secretary to the Fire Brigade Committee. One of the clerks in the office might have the last two appointments. The six positions held by the Surveyor were: As borough engineer and sanitary inspector, £225; as inspector under the Shops' Acts, £5; as chief officer of the fire brigade, £9; as rifle-range warden, commission which amounted to £17 per annum on the average of the last three years, and as recruiting officer. His remuneration for the last office was not stated. Under his appointment as surveyor and inspector of nuisances he was required to give the whole of his time to the council, but the council, he believed, had given him permission to hold the other offices. He considered the position of shops' inspector should be held by someone else; if desired, by one of the staff of the surveyor's department.

A correspondent of the "-Sheffield Daily Telegraph," writing on the handling of steam boilers, gives some practical advice with the expression of his opinion based upon experience—and in this we agree with him—that in the majority of cases where black smoke is given off, it is entirely due to excess air over that required for burning the fuel, or to leakage of cold air through the external brickwork.

A good practical mixture is 15 lb. of air per lb. of coal, the resulting temperature being not far from 3,000 deg., but, as a rule from 20 lb. to 30 lb. of air is the quantity given, and taking the mean of these two figures—*i.e.*, 25 lb. of air per lb. of coal, the resultant will be a temperature below 2,000 deg. With an air supply of 15 lb. per lb. of coal, the heat lost through excess air is only 4 per cent., but with 25 lb. of air the loss of heat is 12 per cent., or a dead loss of 8 per cent. of the fuel burned, and as a Lancashire boiler will burn approximately 1,500 tons of fuel per year, this means an annual loss to the steam user giving the above liberal supply of air to his furnace, of 120 tons of coal per boiler.

One of the greatest mistakes in making our boiler furnaces is the grate area. As a rule, the ratio of this, to the outlet at the end of the furnace flue, is from 2½ to 3½ to 1, whereas the ratio, to get the best results, should not be more than 2 to 1. In the majority of cases, if our present 6-ft. grates were reduced to 4 ft. 6 in., a higher efficiency and greater evaporation would be secured.

If those who are handling boilers would consider that when the fires are stoked the temperature is at once reduced, and that ignition of the gases will not take place until the furnace temperature reaches 700 deg. to 800 deg. it points out the value of stoking the fires on one side at a time, and from front to back, thus allowing a supply of air for the ignition of the liberated gases to come through the incandescent fires on the opposite side of the grate.

This arrangement, with shorter grates, will be found to be the best saver of fuel, and not a burner of, but preventer of black smoke.

The collapse of part of the viaduct which carries the Lancashire and Yorkshire Railway from Penistone station over the Don Valley on its way to Huddersfield and Bradford, which resulted from the fall of a stone pier and the two arches it carried, illustrates the necessity for constant vigilance in the inspection of railway and other bridges. It is too commonly the custom, when such structures are once erected, to take it for granted that they will continue to do their work with safety till the end of time. Fatigue of material and the cumulative effect of recurrent rolling loads are ignored. Time and weather are constantly diminishing the margin of safety originally allowed by the designer, and so, some day, there is an accident, as the inevitable result of negligence. Fortunately, in this case, there was no loss of life.

The reports of the examiners of the Board of Education on the examinations in science and technology for 1915 give a very poor impression of the quality of the instruction given in our technical institutes and polytechnics. Thus in the report on the examination in building construction the examiners remark:—

Attention must again be drawn to the very poor knowledge of materials shown. It ought not to be difficult to provide in all schools small specimens of the principal materials used in building, and the teachers should carefully draw the attention of the students to the special characteristics of the materials; this has frequently been insisted on in the reports on the examinations, but no improvement seems to have resulted.

A lamentable ignorance of elementary mechanics and even of ordinary arithmetic is shown in the answers to Questions 4 and 5; in the latter question very different methods of computation were tried, and the number of bricks arrived at varied from 500 to over eleven millions! In many cases the answers to Question 9 were very disappointing; in fact, it would seem as if many of the candidates had never seen nor had explained to them an ordinary queen post truss. No school ought to be considered as properly equipped without large scale models showing details of construction in brick and stone work, carpentry and joinery, ironwork and plumbing, and the students ought to be made to draw out the details from the models. Many of the answers given are very vague, and appear to be based on hazy recollections of what the students had been taught; they seem never to have acquired the habit of careful observation. The improvement in drawing previously remarked on is maintained.

In far too many cases the teaching has evidently been at fault, and the answers indicate vague memories of something heard but never understood; for instance, "a mitred" flap to the fresh-air inlet of a drain; "glass-lined" drain pipes 6 inches in diameter; fall of drain pipe "1 in 40 for 4-inch pipes, 1 in 60 for 6-inch pipes, and 1 in 80 for 8-inch pipes."

The Rome correspondent of the "Morning Post" narrates a few salient points from a most interesting lecture by Dr. Bannister on "The Temporary Tombs of SS. Peter and Paul," which have lately aroused keen discussion in Rome.

Excavations made during the last year under the church of St. Sebastiano, originally called the Basilica Apostolorum, on the Appian Way, have disclosed, among other buildings, one of the third century, the graffiti on whose walls render it certain that is the spot where the Roman Christians in the third and fourth centuries commemorated on the spot the place where the bodies of the Apostles Peter and Paul were temporarily placed in the persecution of A.D. 258.

This discovery seems to bear out the more ancient tradition that the Vestigia Apostolorum was in or under the church, and not in the building outside its walls which has been considered since the fifteenth century as the Platonia Apostolica built by Pope Damasus.

The excavations are not yet complete, and may reveal the actual tombs.

At the present moment the opinion of Roman archæologists is very divided between the two sites.

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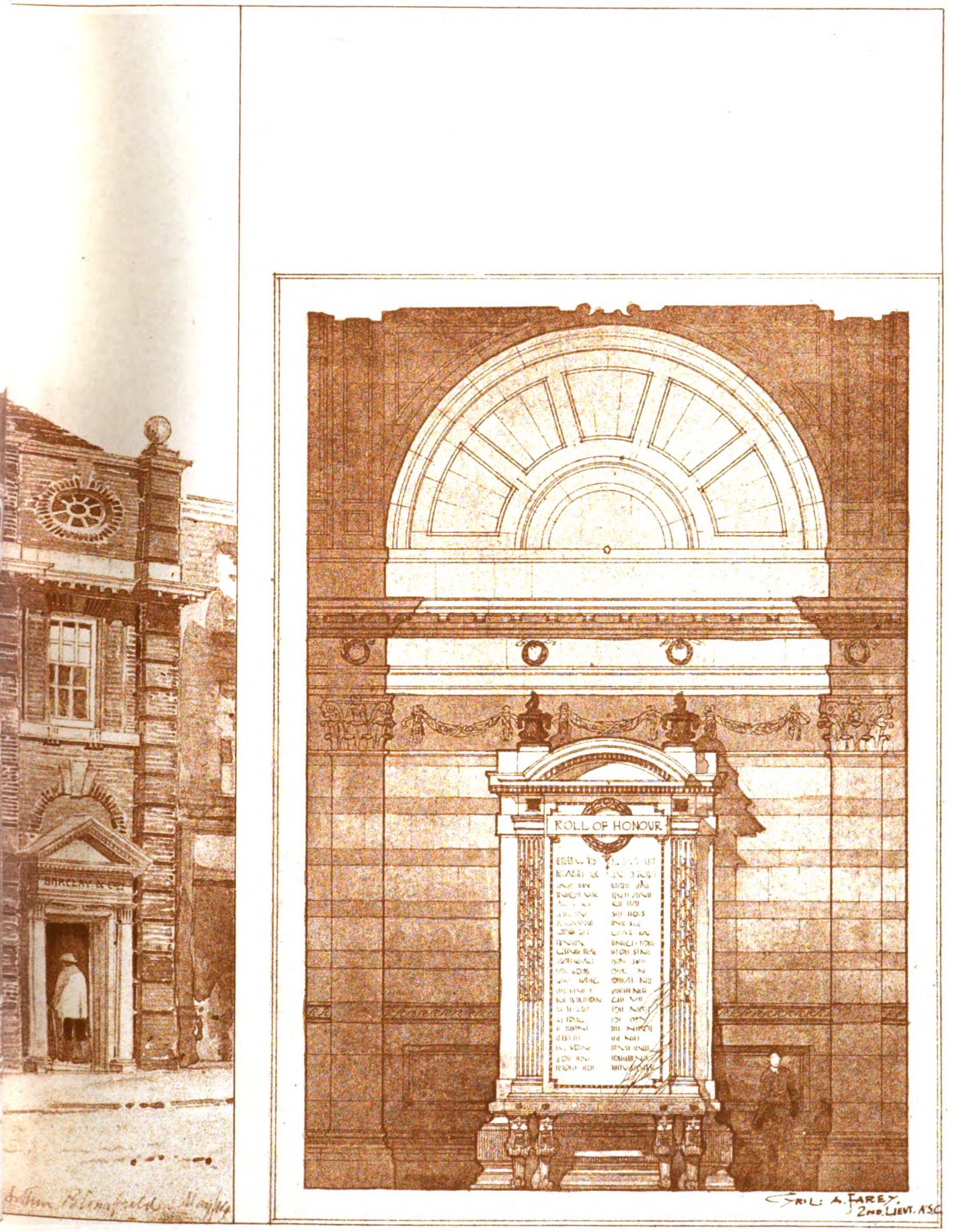


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Mr. ARTHUR BLOMFIELD, F.R.I.B.A., Architect.

(Royal Academy Exhibition, 1915.)

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DESIGN FOR A MEMORIAL TO SOLDIERS FALLEN IN THE WAR.

Mr. CYRIL A. FAREY, Architect.

(Royal Academy Exhibition, 1915.)

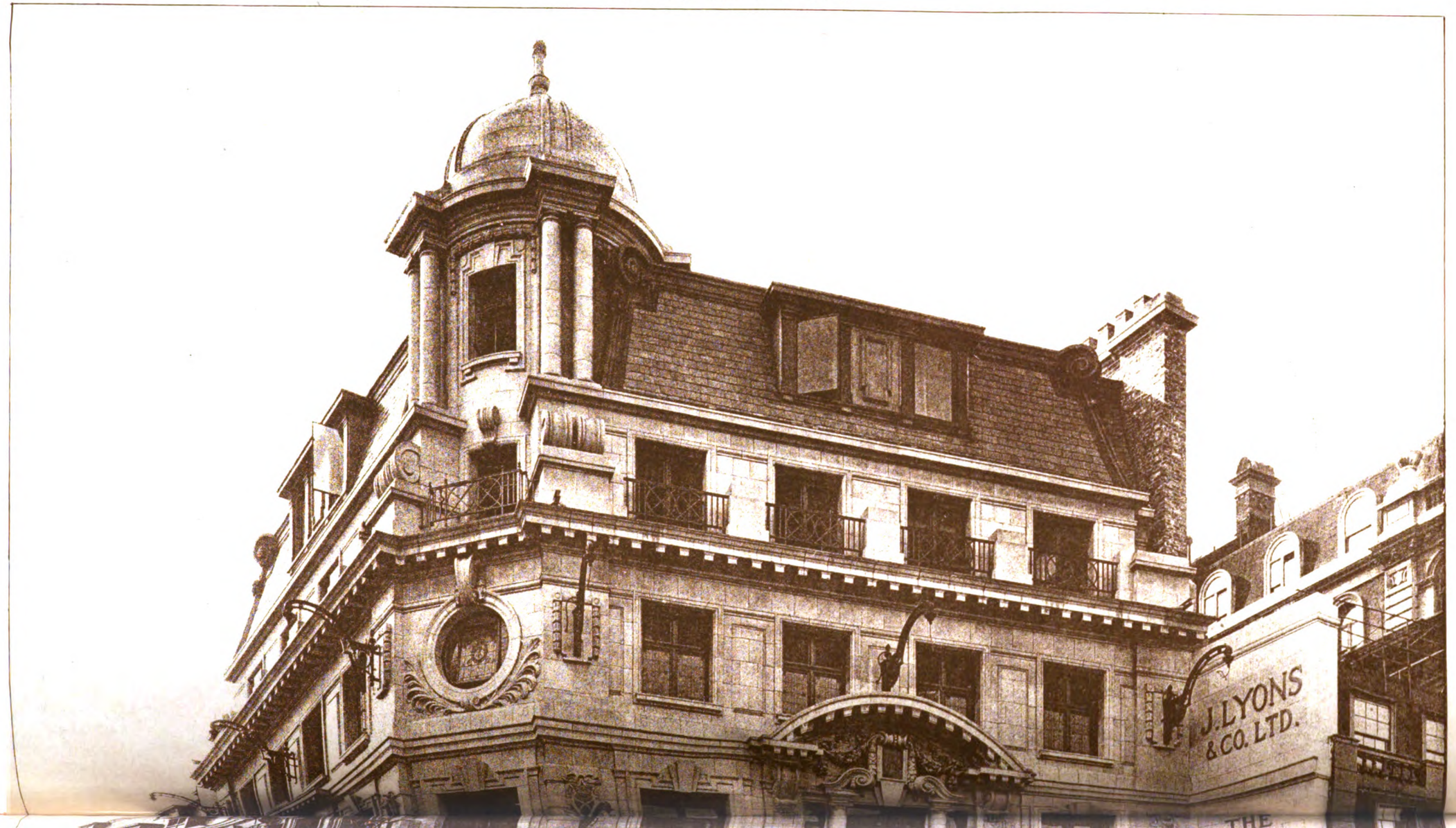
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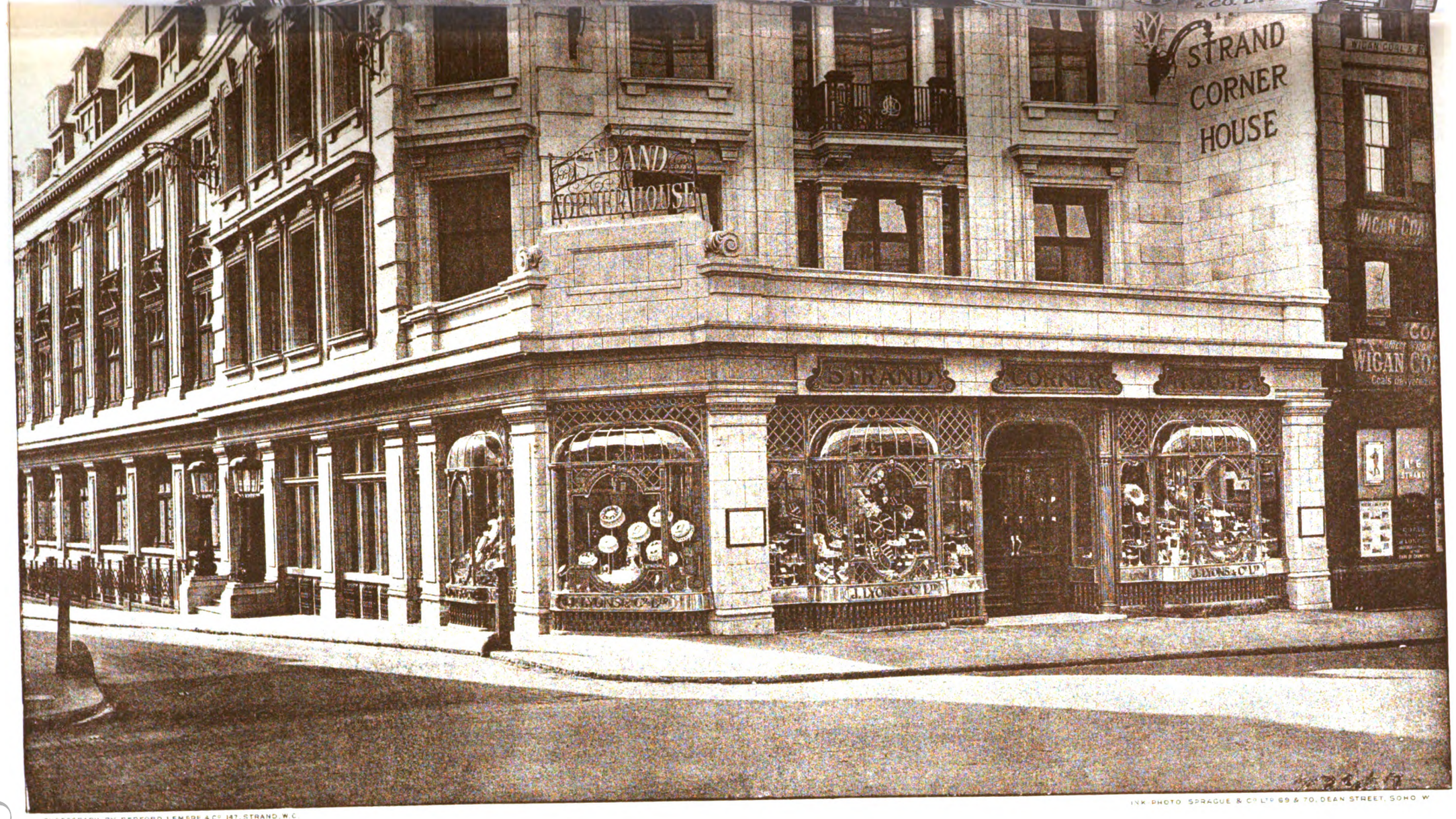
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STRAND CORNER HOUSE, LONDON.

Mr. F. J. WILLS Architect.

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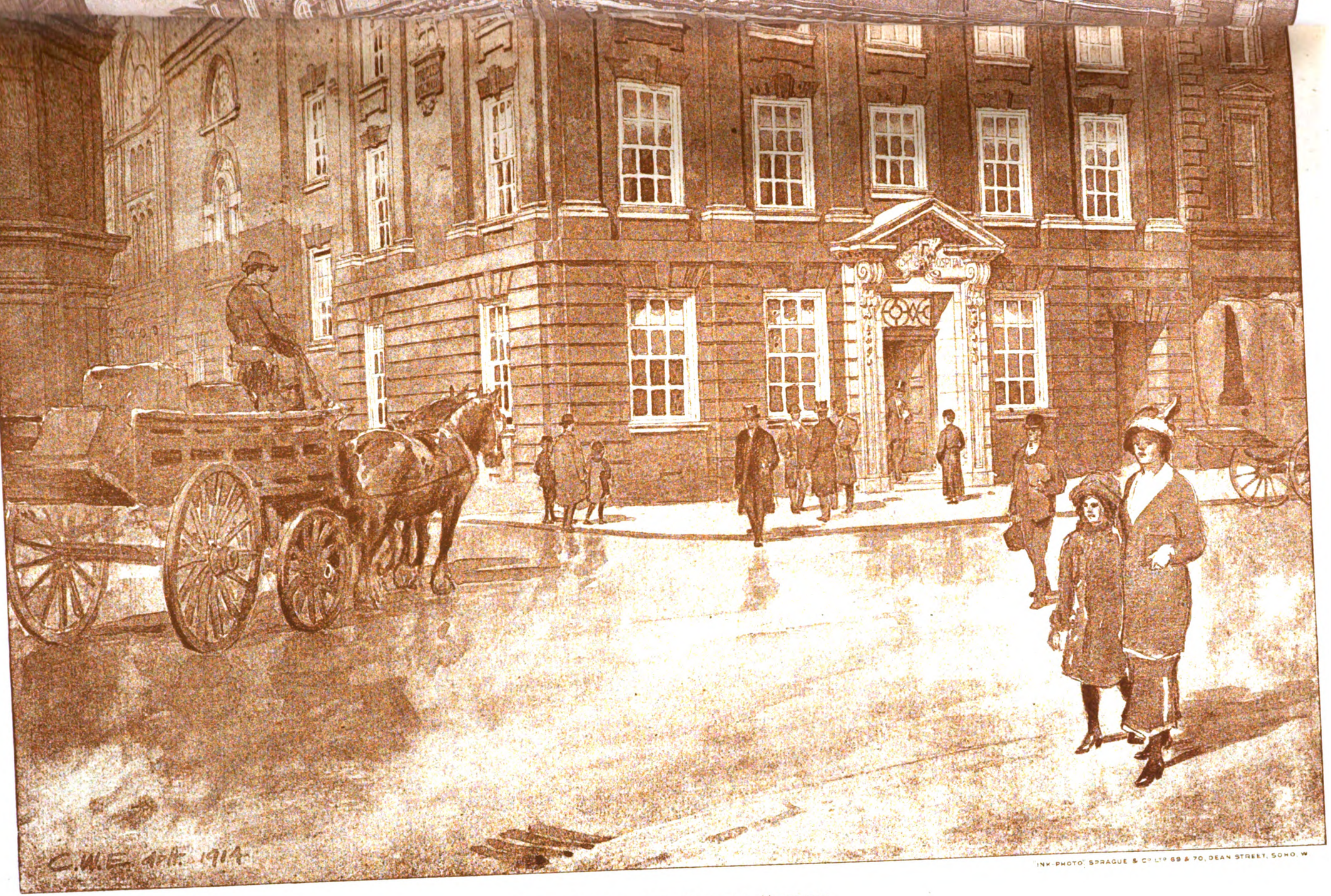
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NEW OFFICES FOR CHRIST'S HOSPITAL.

Mr ARTHUR BLOMFIELD, F.R.I.B.A., Architect.

(Royal Academy Exhibition, 1915.)

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Dr. Bannister pointed out that the first historical notice of the building outside as the place of the Apostles' tombs dates from A.D. 1370; he considered that such evidence as is at present available pointed to some spot under the church, but felt that the question could not yet be settled one way or another.

ILLUSTRATIONS.

NEW OFFICES FOR CHRIST'S HOSPITAL.

THE governors of Christ's Hospital, after the migration of the school from Newgate Street to Horsham, established their temporary business offices in Aldersgate Street in premises which they merely rented, but they have since built a new permanent home in Great Tower Street, and to this the administrative staff was lately transferred. It has been erected from the designs of Mr. Arthur Blomfield, R.A., and the drawing we reproduce was hung in the Royal Academy exhibition last year. The ground floor, which is approached through a wide hall, contains accommodation for the principal officers and clerical staff. In the basement are strong rooms for muniments, books, and other articles of special value. The most notable feature of the first floor is the Court Room, extending east and west, the full width of the premises. At each end has been affixed a stained-glass window, one showing the arms of Edward VI., Charles II., and George V., and the other those of the hospital itself and the City of London. A mezzanine floor contains the caretaker's quarters, above which are two large rooms, in which the entrance and competitive examinations of the two schools will be held.

BANK AT LUTON.

THE drawing here reproduced was at the Royal Academy Exhibition, and it illustrates a bank for Messrs. Barclay to be erected on the same site as their old premises, but including also the adjoining shop. The materials will be 2-inch multicoloured bricks and Portland stone for the cornice and entrance doors, the roofs being covered with antique red tiles. The ground-floor and basement will be used for banking purposes, accommodation for a resident clerk or manager being provided on the first floor. Access is to be arranged from this level down to the garden at the back of the premises. Mr. Arthur Blomfield, M.A., F.R.I.B.A., is the architect.

DESIGN FOR A MEMORIAL TO SOLDIERS FALLEN IN THE WAR.

WAR memorials and monuments may be divided into two classes. One is to commemorate victories or the successful achievements of great soldiers or sailors. Such monuments should be placed in the open air and in the most central positions, such as squares in cities and market-places in country towns, where crowds of people collect and are always being reminded of the glorious deeds of their kinsmen. When a memorial on a large scale is to be erected it may well take the form of a building, while for more moderate requirements it may find expression in a fountain or seat.

The other class of war memorial is that in commemoration of the fallen. If this is to be erected in the open air it is natural to place such a monument in a quiet spot away from noise but at the same time accessible to the public, such as a courtyard, or it may even take the form of a cloister.

It is, however, more usual to place a memorial of this type in a sacred building, such as a cathedral, church, or school chapel, either under the arches between nave and aisle, as in the Wellington monument in St. Paul's, or flat against the aisle or nave walls.

It is for such a position as the latter that this attempt has been made to design a monument for soldiers fallen in the great European war.

Little explanation is necessary beyond a description of the materials. The main part would be executed in cream-coloured marble, with black marble introduced at intervals, and black and white inlay around the roll of honour. The urns on either side of the pediment would be boldly modelled and executed in bronze, and this material would be introduced sparingly into other parts of the design. In the lower part of the monument four lion-shaped consoles support a table upon which wreaths would be placed at various commemoration services.

THE STRAND CORNER HOUSE.

THIS building situated at the corner of Craven Street and the Strand was opened by Messrs. J. Lyons & Co., Ltd., in April last. There are four large floors available for use as restaurants, having a total superficial area of about 17,200 feet.

On the ground floor is a spacious entrance hall and shop for the display and sale of chocolates, and off this hall is a passenger lift, and a spacious staircase leading to the various floors. The room in the basement measures 109 feet 6 inches long by 46 feet 6 inches wide. The ground, first and second floors are converted into one large restaurant by means of well holes, surrounded by iron balustrading in the first and second floors, and over the well holes is a large lantern light.

The remaining portions of the building provide the necessary rooms for kitchens, pastry and chocolate making, larders, service, sculleries, staff accommodation, boilers, pumps, electric switches, ventilation, &c.

The Strand front from the first floor level upwards has been built to the new line for buildings in the Strand, defined by the London County Council. The one storey shop on the ground floor being built out to the old frontage line, will eventually have to be set back to the new line.

The building is a steel framed structure faced with white glazed faience (Marmo).

The architect was Mr. F. J. Wills. The building was erected and fitted up by the Construction Department of Messrs. J. Lyons & Co., Ltd., and the following are the principal sub-contractors:—Steelwork, Messrs. Dorman, Long & Co., Ltd.; Marmo, the Leeds Fireclay Co.; iron fronts and railings, the Bromsgrove Guild; electric lamps and brackets, Messrs. Strode & Co., Ltd.; lifts, Messrs. A. W. Penrose & Co., Ltd.; shop fronts, Messrs. Jones & Willis, Ltd.; ornamental plasterwork, the Birmingham Guild, Ltd.; lead glazing, Messrs. Robinson, King & Co.; metal casements, Messrs. Henry Hope & Sons, Ltd.; pavement lights (ferro glass), Messrs. J. A. King & Co.

COMPETITION NEWS.

DUBLIN.—The Senate of the National University of Ireland invite architects living and practising in Ireland to submit designs for a University building. Applications for conditions, which must be accompanied by £2 2s. deposit, are to be made to Sir J. McGrath, LL.D., registrar, 49 Merrion Square, Dublin.

MR. E. P. WARREN, F.S.A., F.R.I.B.A., has been appointed administrator of the British Hospital which is to be established at Corfu by the Serbian Relief Fund for the benefit of the Serbian Army. It is hoped that Mr. Warren with an advance party of the hospital staff will leave London for Corfu on Monday next.

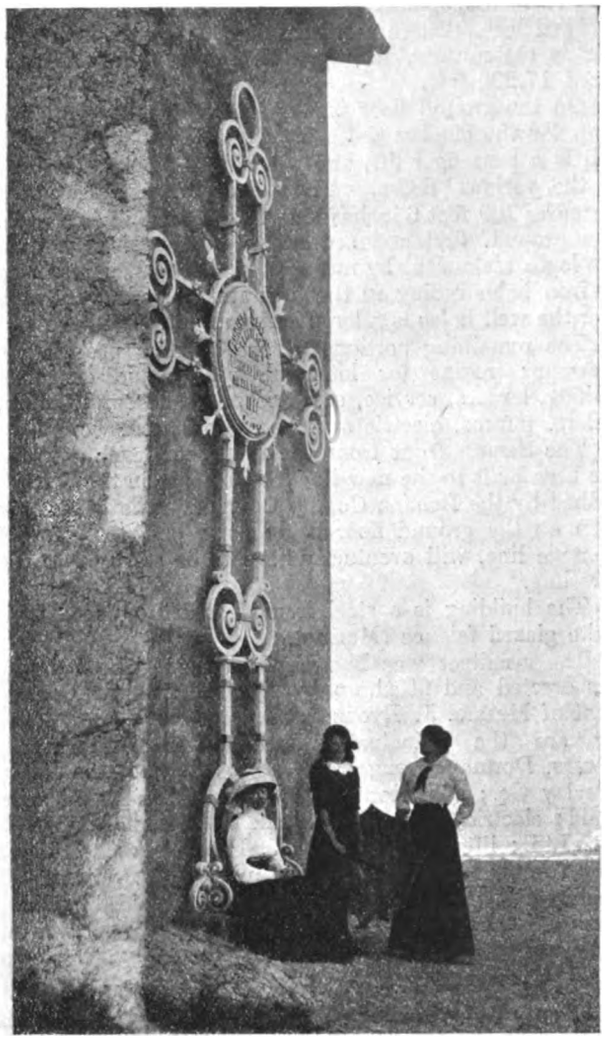
MR. H. AUSTEN HALL and Mr. W. J. Tapper make the following renewed appeal for volunteers to help the St. Paul's Watch to guard the Cathedral against fire, which may be caused by hostile air raids: "More men are urgently needed to protect the building adequately, and to make full use of the very complete provision of hydrants with which it is equipped. Definite war service and winter illness have decreased the number of the watch at a time when the long nights have increased our duties, and although the guard is considerably larger than it was when the last appeal was made, there is a very serious need for more men to make the watch thoroughly efficient." The hon. secretary of the St. Paul's Watch, Mr. Laurence A. Turner, 56 Doughty Street, W.C., will be glad to receive the names of volunteers and to give information.

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AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—VI.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

NEXT to the attractions offered by the lake comes the desire to do a little mountaineering, and, although the mountains closely adjacent to the Lake of Lugano are not high, as mountains in Switzerland go, the climbing of some of them is very enjoyable, and discloses many scenes of great beauty well worth much travelling to witness.



CROSS ON SIDE OF PILGRIMAGE CHAPEL, SUMMIT OF MONTE SAN SALVATORE.

For full enjoyment of the various beauties provided by these mountainous heights, it is advisable, no doubt, to walk, for in so doing some of the finest situations are accessible, and by no other means. Time, however, counts for a great deal, and, unless one is specially equipped for mountaineering, walking is necessarily very fatiguing, and the strength of the traveller is overtaxed, and thereby a holiday is likely to become a labour. Mountaineering proper—that is, the climbing of the higher Alps—is not recommended before the middle or end of July, or after a heavy snow or rain fall, and experienced guides are absolutely necessary for such excursions.

The precautions necessary, however, and the careful selection of the season, in connection with the climbing of Monte Rosa, which is 15,217 feet high, or the Matterhorn, 14,780 feet high, and suchlike giants, are not necessary in the climbing of the comparatively little San Salvatore and Monte Generoso. It may be taken as a general rule that at this autumn time all peaks which are snowclad exceed 6,000 feet in height. All the principal mountains are provided with some form of mountain railway; therefore these excursions may be undertaken with the maximum of comfort and rapidly.

Monte San Salvatore being the closest to Lugano Paradiso, is generally selected first. A trip to the summit of this mountain is well worth taking, and the railway constructed from the base to the top is decidedly interesting, and worth inspection and examination. Architects as a rule, although they have not much liking for the drudgery inseparable from the working out of engineering schemes, have a decided inclination towards engineering works when they are completed.

This railway is 1,800 yards long, and is shown in one of the illustrations, like a thin line tracing its way to the top of the mountain.

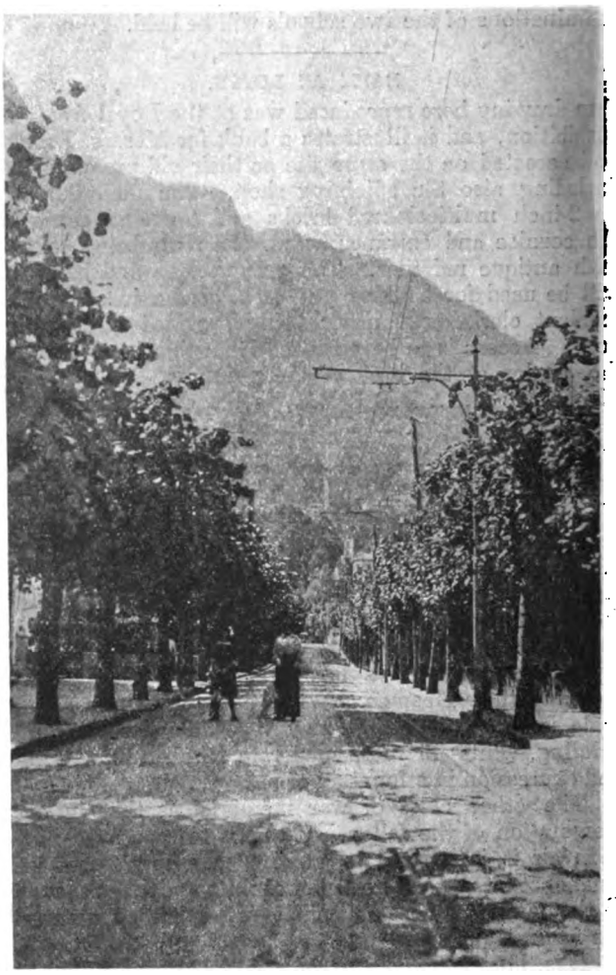
This cable line crosses the St. Gotthard railway and traverses a viaduct 110 yards long, with a gradient of a little over one in three.

The half-way station, Pazzallo, is reached at the height of 1,625 feet, and here the carriage, constructed for the gradient existing on the first section of the track, is changed, and the carriage constructed for the gradient of the second section is entered.

This second gradient reaches over one in two in places, and the terminus of the railway is reached at 2,895 feet high.

A walk of about seven minutes takes one to the very summit of the mountain, 3,000 feet high, on which is erected an exceedingly quaint little pilgrimage chapel (shown in the illustration accompanying Article No. V.), upon the side of which has been erected a very large steel cross.

The view from the top of Monte San Salvatore is very extensive and positively glorious. All arms of the



STREET IN LUGANO, SHOWING MOUNTAIN RAILWAY LINE UP SAN SALVATORE.

Lake of Lugano are seen as on a plan, the mountains with their wooded slopes besprinkled with villas, and some of the higher mountains with their snowclad peaks.

To the north, above Lugano, is seen the double peak of Monte Camoghè, and to the left of this the Rheinwald mountains in the distance. To the east, Monte Legnone

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above Porlezza, and to the west, Monte Rosa and the other Alps of the Valais.

It is by no means an easy matter for the Englishman to fully realise the height of these mountains, even the lowest of them, and the exceeding clearness of the atmosphere renders distances very deceptive.

A fair idea of the height of Monte San Salvatore, one of the smallest of the mountains in this district, may be obtained by the study of one of the illustrations accompanying article No. V., in which two passenger steamers are shown travelling in opposite directions upon the lake below. These steamers are very similar to the river steamers used upon the Thames, and in this picture they appear so insignificant that in one of the prints taken from this negative the photographer removed what he took to be two flaws, and in so doing removed the principal feature for which this picture was specially taken.

A fine walk is provided to those who prefer this mode of climbing mountains, or perhaps have an objection to the somewhat startling appearance of the mountain railway, and many very interesting objects are to be seen and views obtained on such a walk.

Monte Brè, on the opposite angle of the lake, may be also ascended by means of a cable tramway about one mile long, and again very steep, and Lugano is looked down upon from a height of 3,060 feet.

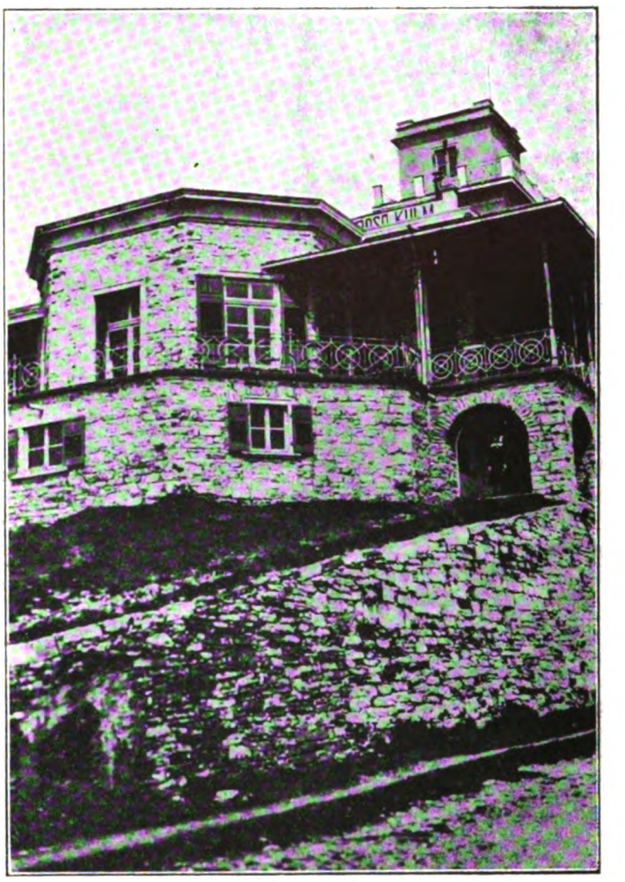
An electric tramway may be taken from Lugano to Tesserete, a distance of about four and three-quarter



THE FORESHORE AT CAPOLAGO.

miles, through the suburbs of Massagno and Sassa in the Cassarate Valley, passing Canobbio, close to the road leading to the château of Trévano, one of the finest private residences in this part of Switzerland. From Tesserete, on the way to Monte Bigorio, a short walking tour leads to many places of interest. Passing through the village of Bigorio, 2,360 feet high, a Capuchin monastery known as the Convento Santa Maria may be seen, and through numerous woods the top of this mountain is reached, 2,810 feet high. Other roads from Tesserete may be taken to the village Ponte Capriasca, in the church of which there is a very fine copy of Leonardo da Vinci's famous picture "The Last Supper," and to Bidogno, from which the ascent of Monte Bar, 5,970 feet high, is made.

It is contended by many that Monte Generoso is the most beautiful mountain in the whole of Italy, and from it, for those desirous of undertaking walking tours, many



SUMMIT OF MONTE GENEROSO.

most enjoyable tramps may be taken into the surrounding valleys below, and on to Argegno, situate on the Lake of Como.

At certain times of the year Monte Generoso is a veritable garden of the most beautiful wild flowers. The villages on the banks of the lake below are seen like little white dolls' houses, and the views obtainable are more like the painted dreams of the artist than actual scenes from Nature.

The beauties of Monte Generoso are more fully appreciated if the visit to this mountain immediately follows that to Monte San Salvatore.

The passenger steamer is taken from the steamboat pier at Lugano-Centrale to Capolago, at the head of the south-east arm of the lake, close to the mouth of the Laveggio.

Capolago is one of the stations on the light railway from Chiasso to Riva San Vitale. On the journey across the lake many beautiful pictures are seen, and many of those of the lake-side villages are rendered particularly picturesque by the wonderful silky appearance of the surface of the lake, upon which are cast most entrancing shadow-pictures.

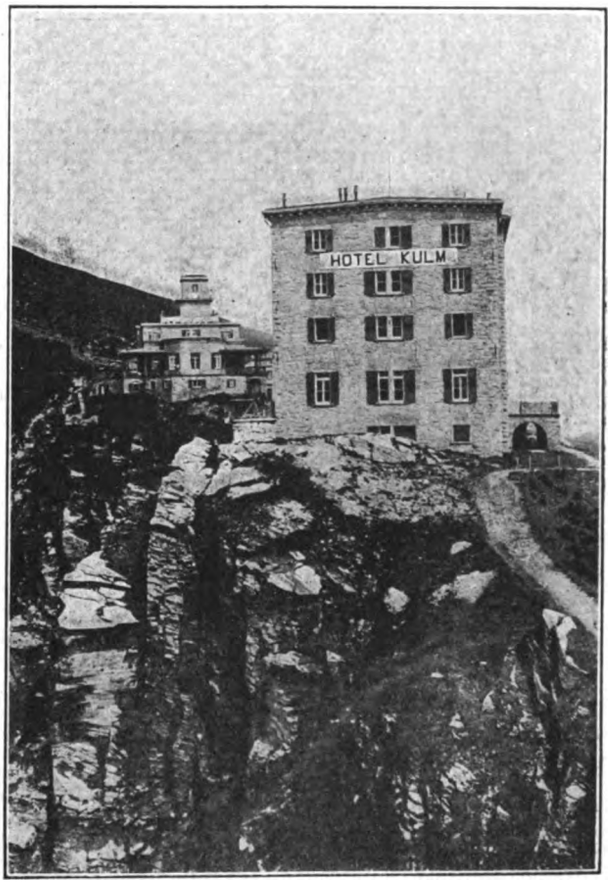
On the little foreshores, particularly at Capolago, one may observe at certain times of the day the housewife washing her clothes at the water's edge, scrubbing them on the large flat stones, and rinsing them in the waters of the lake, as seen in one of the illustrations.

B

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In one hour from Lugano, Capolago is reached, and close to the landing-stage at this latter place the Monte Generoso railway starts. The locomotive presents a strange appearance when resting upon the level rails at the starting point, its construction being such that its normal position is seen only when standing upon the inclined lines of the railway.

On the morning selected by the writer to make the journey from Lugano to Monte Generoso a fine rain was gently falling, the only rain seen during the entire holiday, and the postponement of this particular excursion



SUMMIT OF MONTE GENEROSO.

was seriously contemplated; but fortunately the desire to make this journey was too great to be overcome by what appeared to be a passing shower. This was fortunate in the extreme, for certain strange atmospheric phenomena were witnessed, rendering the journey of much more than ordinary interest.

The railway is a rack-and-pinion railway, and the journey to the top of the mountain occupies about 1¼ hours.

Starting from the steamboat pier at Capolago, the line ascends gradually at gradients varying from one in five to a little more than that, and passes through five short tunnels.

The weather, as before mentioned, having been a little uncomfortable on leaving, the prospect of doing the entire journey in what had now developed into a kind of driving mist was, perhaps, not altogether inviting, for the temperature in climbing is gradually becoming lower.

It was therefore with a considerable amount of surprise that on reaching San Nicolao, some 2,300 feet high, from which point on a fine day a magnificent view of the plain of Lombardy as far as Milan may be obtained, it was observed that the atmosphere became somewhat cloudy or foggy, and in a few minutes the train appeared to ascend into the clouds. So thick was the atmosphere that one might almost have thought that the carriages were passing through a typical London fog.

At perhaps 3,000 feet high the train emerged from the fog, just like emerging from a tunnel, and Bellavista was reached, some 4,000 feet high, in brilliant sunshine.

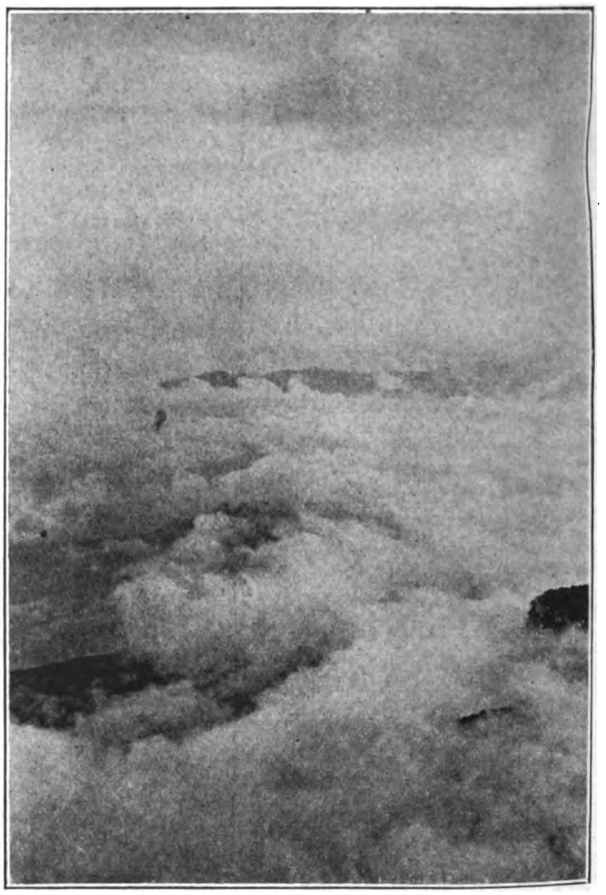
From this point on a clear day, as on this day when the fog had cleared, a magnificent view is obtained of the lake below and the high Alps, with their snowy peaks, from the Gran Paradiso to the St. Gotthard.

The railway ends at a distance of 5½ miles from the starting point, at the station Vetta, Hôtel Kulm, about 5,295 feet high, and this latter portion of the journey was completed with a strange feeling that just below were the clouds and that one had reached some strange place above what appeared to be a sea of clouds. The actual summit of Monte Generoso, 5,590 feet high, is then reached on foot, and, traversing a good pathway, in fifteen minutes the very top of the mountain is reached.

Immediately on reaching the summit of this mountain the writer had a very strong desire to take away with him a permanent record of the wonderful cloud effect created by the then atmospheric conditions.

At possibly some 3,000 feet below the magnificent effect of these snowy, rolling, billow-like clouds passing through the valley was positively beyond description.

Fellow-travellers met at the summit of Generoso expressed the opinion that the picture was not worth attempting and that if taken it would be sure to be a failure. The writer, however, thought that the spoiling of a film was not much, but, on the other hand, if the picture were successful the record would be of more than ordinary interest. The illustration accompanying this article gives a good idea of the result of this particular effort.



CLOUD SCENE FROM TOP OF MONTE GENEROSO

The clouds, thus placed, as it were, midway between the surface of the lake and the mountain top, effectively hid from view the lake beneath, and although the temperature at the mountain top was far below that on leaving the steamboat, yet the sun shone brilliantly and the atmosphere above the lower cloud-level was particularly clear.

The process of dissipation appeared to take place very rapidly, and the clouds could be seen very clearly

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and very rapidly evaporating in a sense into clear air. Within a space of certainly no more than half an hour after reaching the mountain top, the lake with its numerous villages and hillside slopes came into clear, brilliant vision, almost similar to the theatrical transformation effect. The views seen from the top of Monte Generoso include the entire Alpine chain from Monte Viso to the Corno dei Tre Signori and again on the south the plains of Lombardy, with the Apennines as a background. Milan, Lodi, Crema, and Cremona may also be seen in the distance.

The effect of this extensive view is almost beyond description. Several days may without doubt be spent profitably in exploring the beauties of this mountain, but in a short holiday one day, or the best part of one day, is quite sufficient for the ordinary traveller.

Purely architecturally there is nothing worth seeing, the Hôtel Kulm being an ordinary ugly building, erected without a shadow of architectural treatment—possibly the main object and perhaps the only one being the provision of a premises, proof against the changes in temperature, and certainly the great advantage attached to this building from the architects' point of view is that it cannot possibly be seen from any point on the lake, excepting as a mere speck.

The stay at Lugano must now be cut short and the journey continued into the provinces of Northern Italy, and with this object in view the passenger steamer is taken from Lugano-Centrale to Porlezza and the light railway from thence to Menaggio, on the Lake of Como, the most fascinating of all the Italian lakes.

If time is sufficient it is preferable to take a carriage from the landing-stage at Porlezza to Menaggio, for in this manner the extreme beauty of the various scenes may be enjoyed with greater ease and comfort, and greater time may be occupied in admiring the wonderful vineyards and wooded valleys through which the road leads.

Reasonable speed being, however, of great importance, the journey in the train presents much pleasure.

After leaving Porlezza a small lake is passed, called Lago di Piano, and the stately mountains fringing the Lake of Como come into sight. This short journey—of about eight miles—passing Bene-Grona, Velzo, Grandola, and through the deep tunnel of Val Sanagra, after descending rapidly from the hills overlooking the lake, deposits the traveller at Menaggio, on the west bank of the Lake of Como.

(To be continued.)

DILAPIDATION PRACTICE: SOME NOTES AND SUGGESTIONS.*

By CHARLES F. SLATER, F.S.I.

In the following notes I propose to comment upon—(1) Instructions and survey; (2) special covenants; (3) dilapidation during war; (4) schedules of condition; (5) the effect of dilapidations on the value and marketability of property; (6) the Report of the Land Enquiry Committee on Dilapidations.

In the year 1844 the R.I.B.A. formulated a definition of dilapidations which reads as follows:—

"For practical purposes dilapidations are in usual practice understood to be those defects only which have arisen from neglect or misuse, and not to extend to such as only indicate age, so long as the efficiency of the part remains. But if the effects of use or age have proceeded so far as to destroy the part or its efficiency in the structure, this argues neglect or misuse, it being the presumption that at the commencement of his term the tenant was satisfied that every part was sufficiently strong to last to its close."

It is useful to record this definition here as it has formed a common basis of practice for seventy years.

When we surveyors take instructions to prepare a schedule of dilapidations we are generally supplied with certain writings called covenants entered into by the parties.

These we are required to consider in conjunction with a code of legal principles laid down at various times. This may be a very simple proposition or one of great complexity.

Next we have to define in specific items what we take to be the dilapidations accrued, and generally we have also to price each one of those items. These operations make some call on the imagination, but the surveyor wishing to succeed must learn to control that imagination and keep it within the limits usually described as common-sense.

Occasionally during the process of this work we encounter what I will call the human element.

We have all many times met with that delicate blend of the human element and uncontrolled imagination such as is the cause of much of the prejudice which obtains against the subject of this paper. But I admit that in no single instance can I remember its encouragement by a member of this Institution. Unfortunately the dignity of the title "surveyor" (without the prefix "chartered") is permitted to all and sundry who choose to adopt it.

Every surveyor will have his own notions of the order in which he takes his particulars for a specification of dilapidations. My own preference is for exterior of main building first, then the interior from top to bottom, room by room, and lastly, the appurtenant buildings and grounds.

In country work it is especially necessary to check off very carefully at the finish the description of the premises in the lease and plans with the buildings inspected, making quite sure nothing has been missed. It is annoying to find that a groom's cottage about a mile from the mansion has been overlooked.

The dimensions of each room, including the height, are well worth taking as a means of checking the measurement of work, but not in substitution thereof. The same applies to exterior measurements.

Needless to say, floor plans are frequently useful as well as scale sketches of important parts. The camera is not to be despised.

In the preparation of a specification for the landlord, the qualified surveyor is naturally careful to include only such work as properly can be claimed. In settling with a qualified man there is generally little difficulty.

Sometimes claims are made on incomplete instructions or on imperfect knowledge of law and facts. In meeting such claims a general look round at the first evidence of excess may disclose the necessity for particular care in noting objections. Experience is the only guide of what to observe. If a fight should ensue, the value of sketches in illustration of an objection and made at the first survey are most valuable. They convey more to the mind of a judge or a referee than the best phrases ever turned.

To provide a comprehensive catalogue of items likely to arise is beyond the scope of my Paper, indeed, I have only briefly referred to these elementary matters to ensure some completeness and to stimulate discussion. Differences in the covenants and in the age, character, and diversity of the subject-matter of such covenants can only be appreciated after the training which we call experience. Careful personal observation in one's days of pupilage is the safe foundation on which, combined with common-sense, the surveyor may build his experience.

In estimating dilapidations, regard must be had to the legal principle that the measure of damage is limited to the depreciation in value to the reversion.

At the end of the term, repair according to covenants or the cost thereof is generally all we have to trouble about, as that is fairly clearly the measure of damage to the reversion. The distinction between damage to reversion and cost of repairs would appear to be easy of application in a case where a lessee, say for 21 years, covenanted to paint in each seventh year, and had not kept strictly to the time-table. He could not be penalised in

* Abstract of Paper read at the ordinary general meeting of the Surveyors' Institution, held on Monday, February 7.

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damages during the term unless damage could be shown to the reversion, but if, for instance, he painted in the twentieth year instead of the twenty-first, the reversion would be depreciated, and he would be liable to paint again.

To draw a like distinction at the end of the term where premises are coming down is not by any means so simple a matter. Where a lessee holding under full repairing covenants allows the fabric to fall into such disrepair that at the end of the term the lessor has practically no alternative but to rebuild, the fullest compensation should be made to the lessor for the damage he has sustained.

But where a lessee holding under the like covenants has kept the fabric of his building in good repair and the lessor finds that owing to changes in the neighbourhood it will pay him to pull down and rebuild, he should not be entitled to damage, which in fact his reversion has not sustained.

This is not universal practice, but it has always seemed to me to be the proper interpretation of the legal principle of damage to the reversion.

In the comments I have to make on special covenants it will be convenient to follow the order and references in Mr. Graham Mould's paper on the law of the subject:—

(1) Where there is no express contract to repair, landlord's implied obligation.—There is in the Housing and Town Planning Act, 1909, Sections 14 and 15, an implied obligation upon the landlord to keep reasonably fit for human habitation houses of the value of £40 a year in London, £26 a year in a borough or urban district of over 50,000 population, and £16 a year elsewhere. This would appear to allow of recovery of damages by a tenant against his landlord for injury where caused by disrepair.

This was a dangerous legal precedent, and though it may be provided against by insurance, or possibly be circumvented in other ways, I consider it is wrong to place the burden of damage from disrepair upon the landlord without a provision that before any liability arises he should be made aware of the defect. The principle which was laid down in Hugall *v.* McLean as far back as 1885 made it clear that a landlord covenanting to repair should have notice of disrepair before action arose against him. In the Housing Acts so important a factor should not have been overlooked.

It is surely a sound principle that any person hiring a house should have the first responsibility of keeping it as though it were his own. If the landlord after notice fails to act up to any obligation to repair resting upon him, then by all means let him suffer for his neglect. Further, if the statutory obligation of the landlord were limited in the way I have suggested, the benefit of the tenant's protection should be extended to any member of the tenant's household. As the law now stands the tenant alone can recover under the covenant implied by the Housing and Town Planning Act, 1909.

Tenant's implied obligation in the absence of express covenants to repair should amount to making good breakages, besides giving notice of defects. Anything more than this can be provided for by the more satisfactory method of an agreement in writing.

(2) Where there is an express contract to repair, tenant's obligation.—It is necessary to observe the distinction between a general covenant to repair which impliedly covers all buildings on the land demised, and a repairing covenant which is limited in terms to the buildings demised, for the latter will not be extended to newly erected and distinct buildings.

It has been contended in some quarters that there is a hardship on a lessee who, having erected buildings for his own convenience, should be compelled under a general covenant to leave them in repair. It is surely hard on a lessor to have to put in repair or clear away buildings he does not want, yet a perfectly legitimate charge for clearing away is always met with disfavour.

It is not unreasonable to assume that on the grant of a lease a tenant is satisfied with the premises he is taking, and a landlord with the rent he is receiving. The need for future additions cannot always be foreseen, but where it arises and is acted upon it seems as unreasonable for a tenant to object to repair the additions as it is for a landlord to require additional rent for granting a licence to erect them.

Under the covenant "Substantially repair, uphold and maintain," without any specific clauses as to painting and papering, the general practice seems to be to require some reasonable preservation of decorative items. However old, the decorations, if in good condition, should be accepted, and, on the contrary, however new, if damaged or badly done should be renewed in keeping with the character of the property.

Under a full covenant to repair drains it seems to me fair that, however stringent the wording of the covenant, reconstruction should not be called for unless the necessity therefor should have arisen from neglect or misuse. The case of Lyon *v.* Greenhow (1892), where a tenant was held not liable for the cost of making a new drain, though under full covenants to repair as well as to discharge all assessments, would seem to be quite in the fitness of things. Under the Public Health Act, 1875, the landlord appears to have been compelled to make a new drain. He endeavoured to recover the cost from his lessee, and failed.

In the case of Hugall *v.* McLean (1885), a tenant under a three years' agreement remedied at her own cost a structural defect in the drains without notice to the landlord. She failed to recover the cost from him, although he had contracted to keep the drains in good tenantable repair. This decision would appear to have been hard upon the tenant, as she would certainly not have been liable under her covenants to remedy the drain. The case always puzzled me until I found a lucid report of it by our Associate Member, Mr. Arthur Burnaby Howes, in "Macer's Dilapidations." From that I gather the work undertaken by the tenant was not a repair, but a structural alteration; that she did the work and only notified her landlord three months afterwards. The judge is reported to have said that "If in a case of instant necessity like the present the landlord did not act very promptly, the tenant would then be justified in treating the covenant as broken, and doing the repairs himself."

"Fair (or reasonable) wear and tear excepted."—The measure of dilapidation under a covenant to keep the interior in good repair subject to this exemption should extend, I think, to covering damage that with reasonable care a tenant might have prevented.

For instance, where defect in a rain-pipe causes damp inside a house, and destroys decoration or damages woodwork, and the tenant by notifying his landlord might have ensured the prevention of the damage to the interior. He would not be liable for the down pipe, but he certainly ought to pay for what he might have prevented. Yet, as Mr. Howard Martin pointed out here two years ago, it is not always easy to get this from the tenant or indeed anything more than making good breakages.

Some alteration is needed in the framing of covenants in tenancy agreements which repeat the old covenants framed when houses were unprovided with many of the modern necessities of sanitation and comfort. Who of us has not found at the end of a three or five years' tenancy a hot-water service irretrievably ruined through failure to clean out the cistern and boiler at proper periods?

Where the opportunity occurs of doing so it is a simple matter to set out without ambiguity what are the obligations of the parties to an agreement for tenancy. Then when dilapidations occur they are readily identified. It is, however, difficult to get solicitors to vary the phrases endeared to them by long usage, and perhaps it would be even more difficult to persuade printers to scrap their stocks of forms of agreement.

"Tenantable repair."—The effect of the decision in Proudfoot *v.* Hart (1890) seems to be that this covenant

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standing alone has fallen into disfavour. For all the lucidity of that judgment there still remains open the question as to whether the "reasonably minded tenant" is a new or continuing one.

If "reasonably minded" were to be assessed on an experience of tenant's requirements on taking a house in these days it would amount simply to complete repair. But in 1890, when the case was decided, these requirements were not so exacting, and only a few years earlier still tenants did not expect a newly decorated house just for the sake of its newness. There is grained work in a house in my care that has existed at least forty-five years and satisfied several tenants. It is certainly very fine of its kind, and the present tenant, a man of eminence and of considerable taste, is very jealous of its due preservation.

In construing this covenant it would appear to be correct to bear in mind what a reasonably-minded tenant would have required at the commencement of the term, subject to changes, if any, in the character of the property or the neighbourhood that had since taken place.

Standing alone the words "tenantable repair" seem to me as indefinite and objectionable as "fair wear and tear," and should be avoided in favour of more explicit terms.

"Fire or other extraordinary accident."—Because the covenants in leases under this head are generally clear, questions of dilapidations in case of fire very rarely arise between landlord and tenant, but resolve themselves into an estimate of the cost of re-instatement under insurance. Assessors for insurance companies always call for a builder's estimate in support of a claim. The greatest importance therefore attaches to seeing that in the preparation of the specification and bill of quantities nothing is omitted.

"Non-liability of tenant to rebuild in case of total destruction," and "Liability of tenant to rebuild in case of partial destruction."—The practical application of the legal principles laid down in the cases cited in Mr. Mould's paper amounts simply to a common-sense construction of the covenants in each particular case. But I refer to the matter because the cases cited appear to emphasise what I have to say elsewhere on the subject of periodical inspection of buildings.

"Relief against forfeiture."—I gather there is a feeling abroad that, in serving a notice to repair, a landlord need be less specific in his requirements than has heretofore been the recognised practice.

The case of Jolly *v.* Brown, from which this impression is derived, was decided by a majority of the Court of Appeal, consisting of Lord Justice Buckley and Lord Justice Kennedy, the dissenting Judge being Lord Justice Vaughan Williams. Up to this stage the particulars are to be found in Mr. Graham Mould's paper (pp. 143 and 144). I desire to emphasise that Lord Justice Buckley is reported to have said: "It is a matter of degree. It is a question if the tenant has had reasonable notice to do what is required of him."

On the re-hearing, the learned Official Referee (Mr. Ernest Pollock, K.C.), in a very clear judgment, drew attention to the difference between "pointing out the particular breach" and "pointing out particulars of the breach."

Whatever the rights or wrongs of the parties in this case may have been, I cannot help thinking that a notice which in the words of the Act specifies "the particular breach complained of" in general terms only would be a dangerous departure from our accepted practice. Under a system of validating notices to repair, made in general terms, there is nothing to prevent an unscrupulous lessor from severely harassing his lessee, while the latter, from lack of particulars, would have no means of determining whether or not he had remedied the breach complained of.

After all, a notice to repair is an irritating document, and nothing is to be gained by augmenting the irritation. Rather it is for us to do what we can to keep good relations between lessor and lessee.

If the Conveyancing Acts require amendment on the subject of forfeiture, it is abundantly clear from the case of Jolly *v.* Brown that the amenders will need to appreciate the practical side of the subject before putting their amendments into legal terms.

(*To be continued.*)

ABERDEEN ARCHITECTURAL ASSOCIATION.

PROFESSOR HARROWER, Aberdeen, last Friday lectured in the Northern Art Club, before the members of the Aberdeen Architectural Association, on "The Unity of Greek Art."

Mr. W. J. Devlin presided over a good attendance.

The Chairman, in introducing the lecturer, said his great attainments were known to all in Aberdeen and far beyond it. As a testimony to that, he mentioned the remarkable tribute paid to Professor Harrower a few years ago by all his colleagues, students, and friends from all parts. Those who knew his work all united to do him honour. The public lectures which he gave on sculpture last winter showed his readiness and willingness to give his help always and in every way in the interests of general education. He expressed the appreciation of the members of the Architectural Association to him for his kindness in coming there to address them.

Professor Harrower said if one desired to illustrate all the unifying principles of the art of the Greeks from some one manifestation of their artistic genius one would naturally select sculpture before architecture. At the same time some of these common characteristics were beyond doubt presented more vividly by architecture than by any other art: the clarity and lucidity for example, the simplicity, the balance and proportion, the symmetry and harmony, the restraint and reticence, the subtlety, the strong conservatism, the organic growth, the discouragement of egotism and chaotic individualism, above all the appeal to sense and intellect rather than to the emotional and the feeling of the mysterious which they recognised in all forms of Greek art of which they had knowledge direct or indirect. These architectural qualities could be discovered in Greek literature to a remarkable degree, for though Greek poetry and oratory were essentially plastic it was equally true that the fundamental principles of Sophoclean tragedy took concrete and bodily form in the structure of the Parthenon. At the same time the Greek theorists did not regard architecture as one of the fine arts. It was not mimetic, it did not represent anything, least of all did it represent the only thing that the Greeks of the classical period counted the proper object of artistic representation, the human form and the human spirit. This was in entire agreement with their painters' disregard for landscape. Yet Plato united architecture with music as possessing an ethical meaning and influence, using language of the latter art that was somewhat of a stumbling-block to them with their tough phlegmatic northern natures, for no one at the present day saw any need for legislative enactment to stamp out the inanities of up-to-date musical comedy. But it was the common Greek belief that a man could ruin himself body and soul as effectually by bad music as by drunkenness or any other vice.

The average man kept his æsthetic nature carefully secluded, and allowed it an outing on rare occasions. When he went to a picture exhibition he came away with a feeling of having done something meritorious, as if he had given £5 to a charity. To the art that was not boxed up in a museum but made a daily appeal to his eyes, the art of architecture, he was almost equally insensible. If an architect put two hopelessly degraded copies of the Choragic Monument of Lysicrates one above another as a finish to a church tower, the average man supposed it was classical and therefore all right. He did not gnash his teeth; much less was he anxious as to the state of the architect's soul. The country was full of the vilest

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Roman calumnies on Greek architecture, which were as utterly out of place in their climate as a business man would be in Union Street with nothing on but a table-cloth. Having no acute feeling for the beauty or ugliness of artistic production, the average man did not take the further step of thinking about it in terms of ethical good or evil. Yet this was what the Greeks did. They were no believers in the doctrine of art for art's sake, nor on the other hand did they think that the subject was everything, but given beauty in the result, the nobler the subject the higher was the work of art. The ethical note was dominant in their sculpture and literature and painting as far as they had knowledge of it. The only man who doubted its presence in Greek poetry was Mr. Andrew Carnegie, who had said they could not find one ennobling thought in "Homer's barbarism." This criticism was to be listened to with the respect due to Mr. Carnegie's well-known critical eminence and fine literary taste. But to many Homer, the Bible of the Greeks, appeared a storehouse of the most exalted morality, and profitable for correction and reproof and instruction in righteousness. At all events it supplied the teaching of the men who drenched Thermopylæ with their blood and made Britons still at this late day thrill to the name of Marathon.

Another unifying principle was that of religion. If they had to depend on Plato as evidence for the belief that from architecture there might proceed a moral emanation, they had a cloud of witnesses for the influence of religion in Greek art in general. It was different with the Romans, whose greatest triumphs, their basilicas, their baths, their amphitheatres, their porticos, and arrogant aqueducts were secular and not sacred. But with the Greeks the temple was the true centre of all art. It held the statue of the god; its metopes, friezes, and pediments were decorated with sculpture; the precinct within which it stood, as on the Athenian Acropolis at Delphi and at Olympia was filled with statuary. The Propylaea, or entrance gate to the Parthenon, had for one of its wings the Pinacotheca, designed for the reception of painting. The Parthenon itself and the treasure-houses at other sacred centres were the receptacle of artistic gifts innumerable. It was worth while digressing to note that the temple was not intended to accommodate a congregation, though those who troubled themselves about the mode of lighting Greek temples seemed obsessed with the idea that the Greeks needed light to find their place in their hymn-books and for what Robert Louis Stevenson called "the fizzlin' for the text." In the light of that blazing sun, thin laminæ of marble in the roof would have given light enough, as we knew from their use in the apse of San Miniato at Florence. Architectural sculpture, portrait statues of athletes, the architecture of the theatre, painting to a large extent, music and dancing, the latter of which had not necessarily its modern frivolous associations, but was mimetic of character and emotion, were all bound together in the common service of religion. The subjects of vase-painting were largely drawn from Greek mythology, and the religious impress on dramatic and lyric poetry was unmistakable.

No doubt a parallel might be found to this omnipresent religious character of Greek art in the history of mediævalism; but there was this difference, that whereas mediæval art was the servant of an organisation within the State engaged in the endless struggle to bring the people under the influence of religion, Greek art served a Church that was identical with the whole population, who were in no sense antagonistic to religion, who needed no conversion, whose interest was bound up in the favour of their deities. With the Greek, therefore, religion had a unifying influence in art of a totally different kind and degree. They were faced with the paradox that the Greeks who, it has been said, had no sense of sin and no sense of duty, possessed an art that was permeated throughout with religion and morality. The one-sided deduction from the truth that God dwelleth not within the temples made with hands, which provoked Andrew Fairservice to complain that "the dog-kennel at Osbaldistone Hall was better than mony a hoose of God in Scotland," and the antagonism of Puritanism to art, based on the conception that the body was the shame of the soul, were impossible developments of Greek religion, and until it yielded to the solvent of the Sophists' scepticism its union with art was unbroken. To its dependence on religion it was due that Greek art was idealistic, not realistic, for the representations of deity had to have all that was imperfect or familiar abstracted from them and made more sublime and more beautiful than men.

But at the same time the idealism of Greek art was not divorced from nature—it sought to represent nature's types more truly and more beautifully than nature herself had done. It was saved, therefore, from the so-called idealism, as well as from that degraded form of realism that aims at illusion. High generalisation, dominated by the sense of beauty, characterised Greek sculpture, Greek drama, and Greek painting so far as they knew it. Again, Greek art exhibited simplicity, definiteness and directness, as opposed to complexity, mysticism, and what the Greeks called poecilia. It was an appeal, as Matthew Arnold had said, to the sense and the intellect rather than to the emotion. The man who expected to receive the same effect from the Parthenon as from Rheims Cathedral was doomed to be sorely disappointed. This striking feature of simplicity and directness was one that especially marked the architecture of the Greeks, but was manifest also in their sculpture and literature, and probably also in their music. Their love of balance, proportion, symmetry, and harmony, and also their subtlety were manifested above all in their architecture, but it dominated sculpture as well to an extent that it was difficult for moderns to understand.

That the Greek artist should have subjected himself with meticulous obedience to the duty of so presenting subtle relations of the parts of the human figure and of introducing the no less subtle curves of the Parthenon implied a public of marvellous responsiveness and sensibility. Vase painting and poetry, dramatic and lyric, submitted themselves to equally exacting conditions. The structure of the Ode was a miracle of balance, little understood till recent days. The restraint and reserve, again, of Greek art, though presenting such puzzling exceptions as the use of colour in architecture and sculpture, was proverbial. It was above all manifest in the form and movement, the expression and the drapery of Greek sculpture. The best way to understand this was to place the Attic grave stelae, with their beautiful calm and reticence in grief, side by side with the monstrous horrors of the Campo Santo in Genoa. If only a Zeppelin raid would reduce the latter to powder, the Huns would deserve the gratitude of the world. No more perfect example of Greek restraint in architectural ornament could be found than in the north door of the Erectheum, which one could gaze on for hours with exquisite enjoyment.

Lastly, to the conservatism which, whether prescribed by religion or a powerful public sentiment was an influence in all Greek art, they might refer in a large measure the supreme excellence of the Greeks. It was astonishing to mark in every department of art how restricted was the field in which they worked. There were but three styles in Greek architecture; the types of the figure in Greek sculpture were comparatively few: Greek drama was severely circumscribed in the source and character of its plots and by other restraining conditions; the groups and schemes of Greek vase painting could be easily classified. They had to conclude that these creations, which were the marvel of all time, did not come by the waving of the magician's wand. They were the fruits of hard incessant work by a succession of highly-gifted artists whose energies were confined to narrow spheres and exercised in a limited number of types, so that their artistic power was concentrated and not dissipated. It did not follow that if Prussian archi-

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tects or Prussian painters had worked under similar conditions the result would have been the same; but it did show that even to the highest artistic genius the world had ever seen or was likely to see, the palma was not sine pulvere.

At the close, on the motion of Mr. William Kelly, A.R.S.A., seconded by Mr. Harry Townend, Professor Harrower was accorded a hearty vote of thanks.

MEMORIALS AND MONUMENTS.

IN the course of a lecture on the above subject at Carpenters' Hall last week, Mr. Lawrence Weaver, F.S.A., besides showing many beautiful examples of both old and modern work, had some pertinent things to say about the future possibilities attending this branch of art. After remarking that there will be dozens of war monuments erected in and about churches, Mr. Weaver complained that hitherto the British public when it wanted such things has done one of three things: it went to the Army and Navy Stores, or (if a brass was required) it went to one of the clerical tailors who have almost a complete control of brasses, or it went to the Euston Road. But some people were now beginning to realise a serious artist should do this work. Whether the artist should be a sculptor or architect depended upon whether the monument was to be sculptural or architectural. His personal predilection was in favour of going to an architect, as the latter must consider the building as a whole, as also the things to be put in that building. But the client should make sure he is going to the right artist and that the architect will have a sculptor to work with him who is thoroughly sympathetic.

LIVERPOOL CATHEDRAL.

THE progress of the Liverpool Cathedral scheme during the war was outlined by the Bishop (Dr. Chavasse) at the annual meeting of the General Committee held on Monday last at the Church House, there being a good attendance. The Bishop said that the course which the Executive Committee had decided upon, after much thought, was that of completing the shell of the choir and central space, to roof it in, and having made it weather-proof, to wait until the war was over. A sum of £8,000 had been subscribed by a number of generous Churchmen towards the £13,000 required for the purpose, and only a further £5,000 was required.

The annual report stated that the period since the last meeting of the General Committee in July 1914 had naturally been one of much anxiety to the Executive Committee, and the policy which should be adopted by them with regard to the building had called, from time to time, for grave consideration. In the first instance it was expected that there would be unemployment in the winter of 1914, and the duty of the committee was clearly to continue the works subject only to the understanding, which was at once arrived at with the contractors, that every facility should be given to workmen of military age to enlist in His Majesty's Forces. In the spring of 1915 it became evident that the war would be prolonged, and that there was likely to be little unemployment. It also became clear that the demands of the war upon the financial resources of the nation would be such as to necessitate the temporary abandonment of all but the most necessary work, and the reduction of all other expenditure to a minimum. In these circumstances any public appeal for the funds needed to complete and open the first portion of the Cathedral would have been as improper as it would have been hopeless.

The Executive Committee found themselves, however, with certain obligations to various contractors, and with the building at such a stage that the total cessation of work upon it would have resulted in grave loss. They decided that it was their duty, if funds would permit, to protect the first portion of the building against the weather by roofing in the transept and providing a temporary end; and that they should also take such steps as were possible to guard against loss in other directions. But if they could accomplish this, the work of finishing the interior so as to render it fit for Divine service and, still more, the erection of any further portion of the building must submit to some inevitable delay. Several handsome donations had recently been received, for which the Executive Committee were specially grateful, as they showed that in a time of peculiar difficulty, when the claims on the generosity of the public are so large, the diocese was determined that the first portion, now so near completion, of that splendid building should at any rate not lie open to the weather. According to the estimates before the committee an addition to their existing funds of about £5,000 would enable them to cover in the choir and first transept, and they looked forward with hope to securing this sum within the next few months. A further sum of £20,000 would be required to render the first portion of the building available for Divine service.

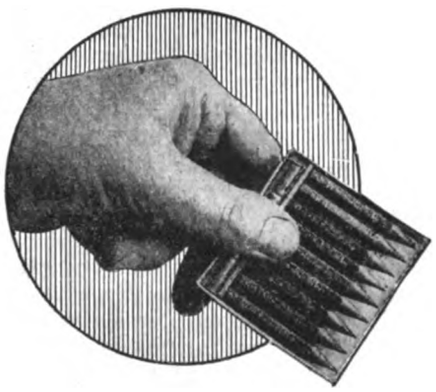
The statement of accounts showed that for general purposes the total contributions received up to now, and interest thereon, was £354,101 5*s*. 2*d*., and with £1,309 19*s*. 8*d*., representing unexpended balances of special funds transferred, made a total of £355,411 4*s*. 10*d*. The total expenditure had been £328,983 8*s*. 9*d*., leaving a balance of £26,427 16*s*. 1*d*. Under special purposes the total contributions, less the unexpended balances of special funds transferred to general purposes, was £116,332 8*s*. 8*d*. The total expenditure was £54,752 1*s*. 9*d*., and there was a balance of £61,580 6*s*. 11*d*. All their investments were terminable, and would realise their face value except one of just under £2,000. With that one exception, the late depreciation caused by the war had not affected the securities of the Cathedral Committee.

PROFESSIONAL ORGANISATION.

AT the London School of Economics and Political Science, Clare Market, W.C., Mrs. Sidney Webb, D.Litt., has been giving, on the last four Mondays, lectures under the general heading of "The Sphere of Vocational Organisation in the Control and Direction of Industries and Services." During the past generation there has been, as Mrs. Webb showed, a rise of professional organisation among brain-workers in their attempt to get control over their services. The whole of ancient civilisation was vocational in its method of government, and there is no sign of there having been associations of consumers as we know them to-day. In the sixteenth and seventeenth centuries the only organisation acting for the consumer was the parish vestry. The craft guilds were all based on individual production and a conception of exclusiveness. In the nineteenth century it was assumed without discussion that such system was unprogressive and bad. The whole movement to sweep away the crafts was advocated as a step towards freedom, both of the consumer and of the producer. A characteristic of modern organisation is the number of bodies competing for the same individuals, which is quite unlike the mediæval craft idea.

The first body to be dealt with in detail by Mrs. Webb was that connected with medicine, and it contained many similarities to that concerned with architecture. The College of Physicians was established in London in 1515, and was so exclusive that the numbers were kept very small. As a result the whole history of medical professional organisation during the eighteenth century is one long encroachment on their privileges, and they deserved it for being such snobs. In course of time there rose up a perfect welter of unqualified men who did not belong even to the Barber Surgeons or the Apothecaries' Societies. At last the General Medical Act was passed and the General Medical Council established. The latter was started purely as a body to control the other examining bodies and see that none fell below a certain standard

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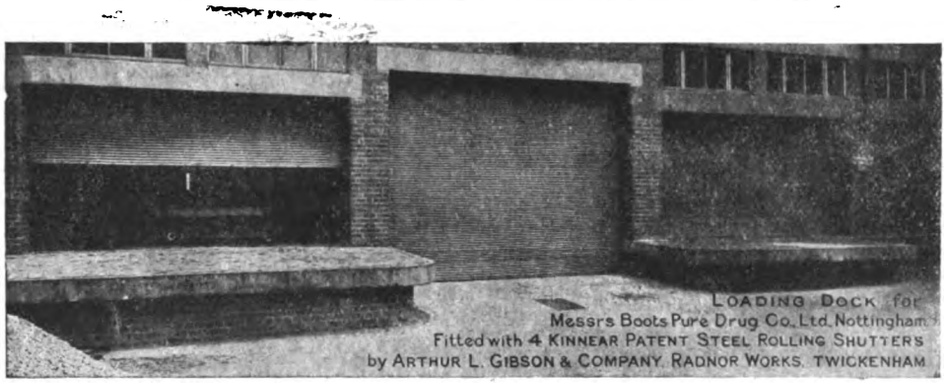
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of efficiency. It has elaborated a system of ethics of great influence, and the secret of its power was that it could strike a man off the register. The British Medical Association was founded chiefly by provincial doctors, and was unlike nearly all other professional organisations in that it had no system of examinations, nor did it ever aim at becoming the authority for regulating entry into the profession. Nor did it have a diploma, nor yet any legal department.

In the fourth lecture, which was delivered on Monday last, Mrs. Webb dealt particularly with the present organisation of the engineering and architectural professions. She commenced by defining a profession as "a vocation founded upon specialised educational training, the purpose of which is to supply disinterested counsel and service to others for a direct and definite compensation, wholly apart from expectation of other business gain." A professional organisation, that is to say, is composed of men who sell their faculties instead of making their livelihood out of selling the labour or commodities of other men. Such professional organisations were classified into four separate groups, each having certain characteristics in common. The first group is that of the learned professions; these are connected in their origin with the ecclesiastical system; they are also distinguished by the fact of having all reached much the same state of development with what is in effect a statutory register and their own governing authorities.

The second group includes engineers, architects, chemists, &c., and is derived from the manual crafts or arts. It is frequently difficult to distinguish between these groups and employers or manual working trade unions.

In her third group Mrs. Webb included accountants, actuaries, bookkeepers, shorthand writers, secretaries, and journalists. The fourth group was made up of managerial organisations.

The leading organisations to be derived from the crafts were, Mrs. Webb pointed out, those of the surveyors, engineers, and architects. They had all a common origin. Thus Sir Christopher Wren was "His Majesty's Surveyor" as well as a great architect. In the eighteenth century one finds engineers and architects bound up together. Towards the end of that century they parted company and started independent bodies of their own. John Smeaton's Club was, in 1771, the first of its kind. It was founded as a result of the vast amount of private bill legislation, which gave engineers many occasions for coming into collision as professional witnesses. In consequence they banded themselves together so that they could work "without jostling one another with rudeness too common in the unworthy part of the advocates of the law." In 1813 the first engineering organisation was started in the Institute of Civil Engineers, with Thomas Telford as President. For the first forty years it remained purely a scientific technical society, and did not bother about abstract professional questions. Its constitution shows a gradual broadening; there are at the present day three classes of members—viz., members, associate members, and associates, with an outer circle of students. For a long time the Institute resisted the idea of examinations. In 1897 an examination system was started, though it is still said that you cannot become a member without first being apprenticed.

The Institute of Civil Engineers has now 10,000 members, the Society of Mechanical Engineers (founded in 1847) 6,000 members, the Electrical Engineers (1871) 7,000 members. There are, in addition, the Institute of Naval Engineers, Mining Engineers, and a host of minor specialists. It is impossible to draw a hard and fast line between the Institute of Civil Engineers and the first trade union—the Amalgamated Society of Engineers. Besides this hierarchy of organisations you get others which cut across them, like the establishment of an Association of Consulting Engineers, which competes with contracting engineers and also salaried engineers; this group is particularly flourishing in America, and it is difficult to know whether the members are the last of a body that is dying out or the first of one coming in. Then the County and Municipal Engineers are a very powerful body, with considerable influence on legislation. The Society of Engineers is a small body and advocates registration. There has been a steady growth of the power of professional organisations of engineers, and the effect has been to standardise education and qualifications. The registration movement has been opposed by the Institute of Civil Engineers, which, as the most aristocratic body, considers its own membership sufficient guarantee. The Institute of Civil Engineers has considerable influence on legislation and on appointments; indeed, there has always been a running quarrel with the Government as to whether all suitable appointments should not be controlled by the Institute. The Engineering Standards Committee (founded in 1901) is a very interesting instance of the combination of the brain workers producing an article and the expert consumer who uses it in his business.

The architectural profession started to organise later than the engineers. The Architects' Club was established in 1791, and the Royal Institute of British Architects in 1834, the latter being granted a Royal Charter in 1837. From one point of view the Royal Institute possessed one defect when it started—a defect which lingered for a long time—in that it was very snobbish: it had a great desire to be well considered by the nobility and the great people of the world. It was laid down by the founders that none should join its ranks who were not gentlemen by education and social status. Their first president was Earl de Grey, an amateur, and he held office till 1859. It also had a conception that architecture was an art and not a science; many members claimed it was an inspiration; the conception being that architecture was not for buildings of common use, like factories or railway stations, but should be limited to the palaces. It was to be a genteel profession. That theory broke down. This was due to such diverse causes as the arrival of materials like concrete and steel, which required technical knowledge, an ever-growing legislation, the general development of building and sanitation. The Royal Institute gradually grew in membership and extended through the provinces and the Empire. But there was a dislike of examinations, and even of systematic education, for it was asked, "How can anyone examine in art?" But in 1877 the principle of examination for Associateship was accepted and enforced in 1884. The examination was made compulsory on Associates in 1891; the Fellowship has depended on Associateship since 1909.

It is interesting to note that there was never any great outbreak of other architectural organisations. The Society of Architects was founded in 1884, and seems to be rather like the Society of Engineers—that is to say, it wants to make one profession of all architects. The Royal Institute of British Architects always objected to registration, thinking it was sufficient to be Fellow or Associate of their own body. This same attitude is to be seen in almost all the other professions. The Royal Institute has taken a big step forward and very much increased its influence by including Licentiates in its ranks. But a hot controversy on the subject of registration still goes on. And there have been in two sessions two opposing Bills—namely, that of the R.I.B.A., which confines registration to its own membership, and that of the Society of Architects, which seeks an independent council representing all organisations and interests. Of course, said Mrs. Webb, registration of architects is an extremely difficult problem.

In all professional organisations there has been an agitation among those in the outer circle for taking a full share in the government of their society. It was, said Mrs. Webb, a nice point whether a pure democracy was the right form of government for a body which has various grades of members. In her opinion so far as an institution is a scientific society or an examining body,

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it is best left in the hands of the highly qualified inner circle of members.

The lecturer then proceeded to deal with the other classes of professional bodies. In conclusion Mrs. Webb pointed out how the first thing to be noticed was that these organisations began nearly always by being concerned with the study of their special subject, and not with the improvement of the members. Therefore, they included not only the casual professional man, but also the amateur, and even the entrepreneur. The subsequent tendency has been for the professional element to get stronger and stronger, and a great development of professional codes is seen. First come disputes as to grades of membership, then as to apprenticeship. Later comes the conflict between the fee-taking man and the salaried man: this latter becomes of very great importance when we come to a Government or other public department. If the question of registration arises, it is perhaps the greatest problem of all. There is naturally a very great distaste for it on the part of the most important organisations. But, to her mind, these aristocrats rather overrated the danger of registration from their own point of view. Even if there is a statutory register for all, there will still be distinction in belonging to the premier body. It seems likely progress will be along the line of public registration, and also in that of an increase in public influence, and responsibility of the higher grades of organisations.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

A New Puzzle for Taxpayers.

SIR,—Several of our members who have received a new form from the Income Tax Surveyors relating to "Excess Profits" are puzzled as to the proper means of dealing with them.

While all desire to pay a proper contribution to the country's need at this time, it is difficult for the uninitiated trader to know what to do, as if the form is exactly followed some traders will apparently be paying away not only all their profits, but making contributions to revenue out of back years, while in other cases traders will be unfairly excused from paying any contributions at all.

May I respectfully suggest that new and enlightening instructions should be promulgated for the use of the honest man unacquainted with legal subtleties and statutory language.

Will those troubled please write to the London Mercantile Chamber, of 44 Bedford Row, W.C., or call on me. My Committee are desirous of elucidating the curious new tax papers which have been placed before them.

Many persons are now wrestling with the latest of official conundrums, and the mutual comparison of experiences will be of assistance to them and to this Association.

If taxpayers fill up these forms without more knowledge of their scope and use they may find themselves penalised. My Association can secure information which an individual cannot obtain from a Tax Office without disclosing his identity.

If my Committee of business men can be of service to your readers, I shall be glad if they will communicate with yours, &c.,

E. MAUD,
Secretary, London Mercantile Chamber.

MR. HARRY EDWIN RIDER, M.S.A., late of Hendon and International Buildings, Kingsway, W.C., died on the 5th inst., and was buried yesterday (Thursday).

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BUCKINGHAMSHIRE.

Beaconsfield.—"The Yews" p.h., High Street: alterations.

DERBYSHIRE.

Chesterfield.—Works: extensions, for the Chesterfield Tube Company.

DURHAM.

Darlington.—Proposed open-air school.

Lanchester.—Proposed Council school for 120 places.

ESSEX.

Braintree.—Chapel Hill Foundry: additions, for Messrs. Lake & Elliott.

Ironworks: additions, for Messrs. Crittall & Co.

HERTFORDSHIRE.

Tring.—Picture Hall, Western Road, for Mr. P. J. Darvell.

KENT.

Bromley.—Houses, Herbert Road. Mr. J. E. Tyler, architect.

House, Howard Road. Mr. F. G. Crickett, architect.

Maidstone.—The "Fisherman's Arms" p.h., Stone Street: alterations, for Messrs. Mason & Co.

Tonbridge.—The "Royal Oak" Inn, Hayesden: alterations, for the Dartford Brewery Company.

LANCASHIRE.

Aughton.—Power house, Winifred Lane, for Mr. G. Steel.

Workshop, Parr's Lane, for Mr. D. Draper.

Levenshulme.—Proposed R.C. Church and School, for St. Robert's Mission.

Todmorden.—Garage, near Calder Vale Mill, Cornholme, for Messrs. Crossley Greenwood & Son.

OXFORDSHIRE.

Oxford.—Business premises, Queen Street: rebuilding, for Messrs. Freeman, Hardy & Willis. Mr. H. Quinton, architect, 22 George Street.

STAFFORDSHIRE.

Leek.—The "Wellington" Inn: alterations, for Messrs. Marston, Thompson & Evershed.

Stafford.—Cottage homes, for B.G. (£2,500).

Walsall.—Picture house, Bridge Street, for the Provincial Cinematograph Theatres, Ltd.

SURREY.

Barnes.—Four houses, Vine Road, for Mr. E. Bates; also Four houses, Westwood Road.

Richmond-on-Thames.—Soldiers' Home (£50,000). Mr. G. G. Scott, F.R.I.B.A., architect, 7 Gray's Inn Square, London.

WARWICKSHIRE.

Birmingham.—Premises, Livery Street: alterations and extensions, for Messrs. Larkin & Sons. Mr. W. H. Ward, architect, 30 Paradise Street.

Two Works. Messrs. Gibbings (of 33A Hammersmith Broadway, London) and Mr. A. E. McKewan, A.R.I.B.A. (of 95 Colmore Row), architects.

Coventry.—Munitions factory, for Messrs. Hotchkiss et Cie.

YORKSHIRE.

Bradford.—Central Laundry, Valley Road, for the Corporation.

Castleford.—Shop, Carlton Street: alterations, for the Castleford and Allerton Mutual Industrial Society, Ltd.

Motor Garage, Fryston, for the Wheldale Coal Company.

WALES.

Mold.—Cottage Hospital: extension.

Porthcawl.—Proposed Fire Station.

Skewen.—Drynma House: conversion into home for feeble-minded patients, for the Glamorganshire Poor Law Establishment Committee.

SCOTLAND.

Airdrie.—Works, Gartlea Road: alterations, for Sir William Beardmore & Co., Ltd.

Premises, Hogg Street, for the Electric Supply Company, Ltd.

Rothesay.—Hospital: additional ward. Mr. Dawson, architect.

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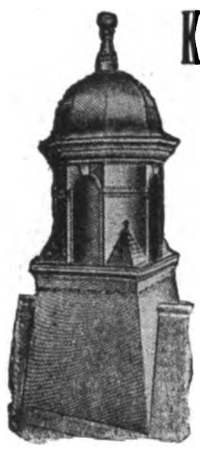
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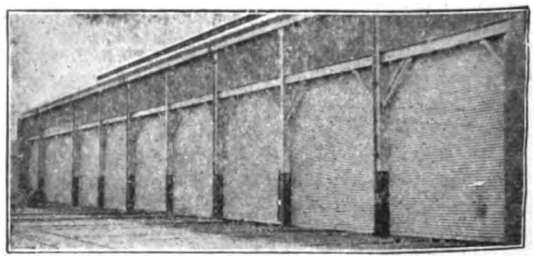
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THE ARCHITECT

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FORTHCOMING EVENTS

Monday, February 21.

Royal Society of Arts: The last of three Fothergill Lectures on "National and Historic Buildings in the War Zone: their Beauty and their Ruin," by Rev. Dr. Herbert West, D.D., A.R.I.B.A., at 4.30 P.M.

Victoria and Albert Museum: University Extension Lecture XVIII on "English Renaissance Architecture (1500-1900)—Famous Jacobean Mansions and Colleges," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Tuesday, February 22.

Institution of Civil Engineers: Paper entitled "The Main Drainage of Cairo," by Mr. C. Carkeet James, M.Inst.C.E., at 5.30 P.M.

Illuminating Engineering Society: Discussion on "Some Future Possibilities in the Design of Instruments for Measuring Illumination," at the House of the Royal Society of Arts, at 8 P.M.

Berks Archæological Society: Paper entitled "The Excavation of the Episcopal Palace at Sonning," by Mr. Harold Brakspear, F.S.A., at Abbey Gate, Reading, at 2.30 P.M.

Wednesday, February 23.

Carpenters' Hall: Lecture entitled "The English Roof," by Mr. Arthur Keen, F.R.I.B.A., at 7.45 P.M.

Thursday, February 24.

British Museum: University Extension Lecture XIX. on "Roman Architecture (B.C. 100-A.D. 300)—Tombs, Aqueducts and Bridges," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

CIVIC ARTS.

In the propaganda which has been taken up by the newly constituted Civic Arts Association it is already clear that the public needs to be informed of the distinction between Civic Arts and Civic Art, inasmuch as the latter term has already been appropriated as meaning one particular aspect of town-planning, the conception and the carrying into execution of schemes or designs for making a town beautiful. Town-planning has caught the public fancy, and it is important that civic art should be recognised by the public as an essential part of town-planning that is to be satisfactory in its operation.

Town-planning may, quite easily, be prosecuted with an undue insistence upon its utilitarian aspect. Roads may be laid out with the single intention of providing, by their directness and their capacity, for the necessities of traffic not only first and foremost, but exclusive of all other considerations. But such town-planning falls far short of civic art, and hence fails in its potential beneficence to the commonweal. A well-planned town, to realise its full significance, must not only provide the utmost of material convenience, but must be such a work of art that its beauty also must be as completely achieved as the mind of its creator and the circumstances to which he must conform will permit.

Fortunately, in this country, town-planning, so far as it has proceeded, has not been monopolised by engineers, but there has been a general recognition, thanks to the various—shall we adopt Professor Lethaby's words and say—"groups of busybodies" constituting the various Associations, Societies, or Institutes engaged in pressing town-planning upon the public, a general recognition of the value of the "amenities," or, in other words, the civic art of making a town pleasant and beautiful.

The object of the Civic Arts Association, if we understand it rightly, goes beyond this, or at least is distinct fro mit, in that the newly formed body intends "to support all efforts to embellish our cities, towns, and villages by the employment of our artists and craftsmen."

It is a happy inspiration for the new Association to focus the public attention for the time upon memorials, for there is no branch of art production in which the particular tenets of the "arts and crafts" movement can, in these days of machinery, be more appropriately exhibited. We do not want our war memorials turned out by the thousand, like 75 mm. shells, all alike to the exactitude of extreme mathematical accuracy. Each memorial should be distinctly individual in character, each showing the impress of the personal feeling of its creator, whether artist or handicraftsman, but best of all when the actual work of one combined artist-craftsman in conception and execution together.

Such desiderata lead naturally to the position taken by the Civic Arts Association "to promote the utilisation, for civic purposes, of the arts and crafts throughout the country" by urging the employment of the individual talent of the numerous students of art schools who have been trained in large measure at the expense of the nation as a recognition of the duty of the State to educate, but after their faculties, in many instances of no mean order, have been developed, have been allowed to drift, as flotsam and jetsam on the sea of commercialism, vaguely hoping for employment.

The Civic Arts should form the field in which those who have proved themselves not only as successful in mature production of art, but as students in the schools, should find profitable employment and golden harvests, even though the field be divided into small holdings, which may suffice indeed for healthy and happy livelihood though not for the accumulation of wealth.

For such employment to be successful heed must be taken of the wise advice of Professor Selwyn Image to make an endeavour "to decentralise things, to restore not a little of that local work with its individual colour and interest, its personal characteristics, which for so many a day we have more and more let go to our loss." And to assist the employment of local talent, the restoration of local work, "In every important centre throughout the kingdom," as Professor Image said, "some consultative body might come, and ought to come, into existence, a small, carefully selected, intelligent, representative body of wide sympathies, beginning now at once to take matters into their most careful consideration from every point of view, preparing themselves to discover and make use of that large amount of local artistic talent which does really exist, and alas! too often starves."

The value of such consultative bodies would be twofold. It would be assurance to the public that the unknown but able local artist or craftsman who is to be entrusted with his first commission may safely be so entrusted, and it would give that reasonable guidance and restraint which the artist in the exuberance of his first enthusiasm would often need.

War memorials may very well serve as the first opportunity for the introduction of those principles which the Civic Arts Association sets forth as its objects, and there is room for the employment of many different crafts in such memorials, but once introduced, there is reasonable ground for hope and expectation that we should not stop there. The public would learn that, as Professor Lethaby said, "Art is many-sided and mani-

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fold; it is not only a question of high genius, that is only the crest of a great wave rising from gifted communities, and without the flood of common art you cannot have the crest of genius. This common art which is the thing of importance, as the other will form itself, is concerned with all the routine things of life."

We wonder how many of the general public ever realise that every chair and every table, every spoon, and every fork that they use had its form and shape determined originally by someone's drawing or model. That in the original determination the conception was of someone who either was or was not an artist. That if they insisted upon it the form of every article of daily common use might be the conception of a trained and even talented artist. This is what is meant by "common art," or, as Mr. George Clausen put it, "domestic art."

The public still requires educating up to the comprehension of the fact that Art is not merely a matter of oil paintings and marble statues, of picture galleries and museums, but enters, or should enter, into every detail of the life of everyone. War memorials may be made a step towards this comprehension, but the Civic Arts Association, if it is to fulfil the function for which it has the opportunity, must see to it that it is only the first step.

Earl Beauchamp, at the Mansion House meeting, stated that the new organisation "co-ordinated societies which existed already." But the tenets of the "arts and crafts" movement, which we have said can be appropriately exhibited in war memorials, must be relaxed if the new Association is to win from the public the right appreciation of and demand for common or domestic art. It is useless in these days to fight against the operations of machinery and the artist who is to influence the form of the articles of daily common use must learn to design beautiful things that can be produced in their thousands by machinery.

NOTES AND COMMENTS.

We are asked to announce that the general meetings of the Royal Institute of British Architects will in future be held at 4 p.m., instead of 3 p.m., as announced in the "Kalendar" and other publications of the Institute.

It is quite clear from the reply made by Mr. Asquith to the deputation organised by the National Art Collections Fund and the Museums Association that the object of the Government in closing museums is fleabite economy and not the safety of invaluable treasures. Museums, in fact, in the opinion of our present Government, are amusements and luxuries, not necessary means of education. Their closing will not affect so many votes as the shutting-up of picture palaces and theatres, and the public resentment may be lessened by allowing the "more popular parts" of the Natural History Museum, the National Gallery, and the Victoria and Albert Museum to remain open. Which is just the policy one might expect from a clever Parliamentarian who means to direct his fullest ability to the all-important consideration of keeping his job.

We have always, in "The Architect," regarded the resuscitation and development of an efficient system of canal transport as of high importance to the building trade, and we, therefore, welcome the report in the "Birmingham Daily Post" of the meeting of the Birmingham Business Club, which pledged its support to the Waterways Board's scheme for the development of our canal system. The Lord Mayor (Alderman Neville Chamberlain) presided over a large gathering assembled to hear a lecture on canal development by Mr. Frank Impey, Secretary to the Board.

The Lord Mayor said for a good number of years he had taken a great interest in the subject of canal transport, and, with Mr. Impey, had carried on an active campaign, not only in Birmingham, but also in other parts of the country, for which he thought he might claim a fair measure of success. They had been fortunate in securing the support and sympathy of the Birmingham City Council. That body backed their general proposition as to the development of waterways, and had also accepted the principle of local contribution. Further, that principle had been accepted by the municipal corporations and many other bodies in different parts of the country. If we had only had a man at the Board of Trade with a little strength of character and a little imagination to see what might come in the future, he thought they might have got a good deal further than they had done. However, he felt encouraged by the progress they had made, and he believed if the war had not intervened, they might have got within sight, at any rate, of the beginning of their objects. Since the war began they had recognised they must lay their project aside for a time. But it was only for a time. They were awaiting their opportunity, and when the war was over, and it was possible once more to turn their thoughts to commercial and other operations of peace, they would be fortified with a great mass of new ammunition in the shape of arguments derived from the progress of events during the war. Since the war began we had seen the railways of the country absolutely congested. Ever since the start of the war they had been totally inadequate to carry all the material required to be carried, and if only we had had the improved waterways the association had been advocating, if we had been able to run 100-ton barges on the principal waterways, we should have avoided, to a considerable extent, the difficulties so many traders and manufacturers had experienced. Although a good part of her northern canal system was in enemy hands, France had made great use of her waterways. He ventured, too, to say that the success of our enemies in turning out munitions was largely due to the fact that in the past they had spent millions of money upon the development of their inland waterways. Their most famous canal had proved an admirable cruising ground for their fleet. We had never anticipated we should require a canal in this country for this purpose, and our experience, so far, had shown that such a provision was not necessary for us. But the whole course of events during the war had justified the arguments the Waterways Association put before the country, as to the value of inland waterways.

There were some few points of importance in the discussion on British forestry at the annual meeting of the Royal Scottish Arboricultural Society. The Society has for over fifty years preached the gospel of afforestation, but it has needed the present war to enforce the lesson of its importance. One point put forward by Mr. J. D. Sutherland, of the Board of Agriculture for Scotland, was the necessity for paying attention to the grading of home-grown timber. From the point of view of the building trade, this is of prime importance. No profitable forestry can afford to neglect this consideration. Mr. A. D. Richardson made the point that if forestry is to make any progress at all in this country it must be started with fast-growing trees, as an example of which a previous speaker instanced the black Italian poplar. Pit-props and wood-pulp provided a sphere for the use of such quick-grown timber. Mention was made of the desirability of applying compulsion to owners of woodlands in the direction of replanting, but it was urged, and rightly, that such compulsion must be accompanied by the example of the Government in practising afforestation.

At the meeting of the Society of Antiquaries last week an interesting paper was read by the Rev. H. F. Westlake on a recent examination of the shrine of St. Edward at Westminster Abbey. He said that certain measures necessary for the protection of the shrine in these troublous days had required the temporary removal of the wooden superstructure, exposing to view the

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cavity in which rests the coffin of the saint. Micklethwaite said that the shrine was destroyed by Henry VIII., but Sir Gilbert Scott was of opinion that the marble superstructure was taken down only far enough to allow of the removal of the body, and he (the speaker) was inclined to think that Scott was correct. Feckenham, in his brief tenure of the revived abbacy of Westminster, seems to have replaced the body and set about the restoration of the shrine, the work occupying only twenty-two months and being hastily done. A photograph was shown on the screen, and the author pointed out that the walls of the interior cavity were rough and uncut, and the cavity was exactly filled by the chest, which was made by order of James II. to contain the coffin. It would be seen that five iron clamps with hinged joints passed round the chest, two additional clamps were at the head and foot, and two bars of iron crossed the chest and were set in lead beds in the masonry, for the purpose, perhaps, of confining the chest to its place, although they might have served the purpose of tie-rods. Two curious movable stones would be noticed in the frieze of the shrine. Many theories had been put forward to explain them, but they still remained a puzzle, and he could only suggest that they were made so that objects brought by worshippers could be held in contact with the saint's coffin. To this day a candle held at one side of the shrine showed a thin ray of light above the coffin head.

The Bishop of Manchester, in his "Diocesan Magazine," calls attention to the importance of the valuation of church and schoolroom sites by the valuers under the Land Valuation Act. "I have been told on good authority that other denominations are examining these valuations very scrupulously. There is some reason to fear that Churchmen are not taking equal pains. It must not be supposed, for instance, that under-valuation is a gain. It is true that in case of taxation of land values, if such sites are taxed at all, the lower the amount that we had to pay, the better most of us would be pleased. But there is another side to the picture. In case of sale there would be heavy increment duty. What is even more to be feared is the possibility of compulsory sale for civic or other improvements. In the case of such sales, the fact that we had accepted a low valuation without demur might involve us in serious loss. What we should aim at, not only in our own interests, but as good citizens, is a fair valuation, with respect to which expert advice ought to be obtained. There is time to obtain such valuations now. But unless objection is made before the end of the war the Government valuation becomes fixed automatically in the course of a very few weeks after the war is over."

We think the Aberdeen Town Council have acted wisely in deciding against the proposition to abolish the office of City Architect and to hand over the duties of that gentleman to the Burgh Surveyor's Department. A borough surveyor has quite enough to do in his own sphere, and his attainments are usually suited for his particular province, and not for the proper conduct of architecture, so that an attempt to load him with the duties of an architect usually means the employment of one or more lightly paid and irresponsible assistants of only moderate architectural ability as an appanage of a department whose proper functions are of quite a different order.

In an address to the Scottish Ecclesiological Society on "Edinburgh Castle and its Religious Houses," Mr. W. Moir Bryce, F.S.A., told his audience that the ancient and picturesque Castle of Edinburgh still formed the most outstanding fortress in the United Kingdom. It had been so intimately interwoven with the progress of the country that it had dominated the whole history of Scotland for a period of nearly a thousand years. Owing to the loss of their ancient Records the actual history of Scotland might be said to commence with the reign of Malcolm Canmore and of his saintly Queen Margaret. Her name had been closely associated with the Castle, and it was surprising that, notwithstanding the tempests of shot and shell and other misfortunes that had so often overwhelmed all its buildings, there should still remain to them an echo of her pious personality in the little chapel which she founded, and in which she worshipped, more than eight centuries ago. Of this building Mr. Moir Bryce gave an interesting historical sketch, illustrated by lantern views. Her son, King David I., who ascended the throne in 1124, established a colony of Augustine canons-regular in the Castle, but after a residence of two or three years there the inconvenience of its situation as the site of a convent became apparent, and it was then that the King fixed upon the present position for his new Abbey of Holyrood. There must have been a church utilised by them, because they found the Bishop of St. Andrews confirming, in 1130, a grant by the King to the church of the Castle. In March 1314 the Castle was captured by Randolph, Earl of Moray, who, with a view of providing no possible cover for the English invader, levelled every building on the Castle Rock to the ground, with the exception of St. Margaret's Chapel. In 1335 there is mention of St. Margaret's Chapel in connection with a visit King Edward III. paid to Edinburgh, and in the contemporaneous English accounts reference is also made to the ruins of the large church for the use of the garrison—probably that used by the canons brought by David II. in the early years of the twelfth century. It was partially reconstructed in 1335 by the English, who utilised it as a granary, and there were several notices of its reconstruction or repair in Scottish records under the name of the church of St. Mary. It stood on the north side of the Palace Square, and in the middle of the eighteenth century it was mentioned by Maitland as having been converted into an armoury and gun store. A new building on its site was erected about the year 1850 to provide additional barrack-room accommodation. In 1366 there was a notice in the Exchequer Rolls of a payment of a stipend of £10 to the chaplain of the church of St. Mary, and in 1389 one of £8 was granted by Robert II. to the chaplain in St. Margaret's Chapel; but in the following year this latter sum was transferred to the chaplain of St. Mary's, whose annuity of £10 was suppressed, although he was, nevertheless, taken bound to officiate at St. Margaret's Chapel on all necessary occasions. The stipend was afterwards raised to £10, a fairly liberal sum in those days, and in the Register of the Privy Seal the appointment of the successive chaplains is duly recorded down to 1566, when the office was held by Gerome Bowye, designated as Master of His Majesty's (i.e. Darnley's) wine-cellar. Down to the death of James V., as they learned from the extant fragments of the Treasurer's accounts, it was the practice of the Sovereigns of Scotland to be present in person in St. Margaret's Chapel on the occasion of the annual festival of the saintly Queen. In the latter part of his address Mr. Moir Bryce gave a graphic account of the military history of the Castle and its successive alterations and rebuildings, illustrating his remarks with views of old maps and charts, and with photographs of portions of the Castle brought to light by recent excavations. Speaking of the place of execution on the Castle Hill, he said that it was probably covered by the second from the east of the towers that now line the south side of the Esplanade. He suggested that some memorial plate should be attached to this tower to recall the scene of the tragedies which took place there. In 1681 the Castle Hill was finally abolished by the Crown as a place of public execution.

THE King has approved the appointment of Sir E. Vincent Evans to be the chairman of the Royal Commission on Ancient Monuments in Wales and Monmouthshire, in succession to the late Sir John Rhys, and of Colonel J. A. Bradney to be a member of the Commission in the place of Sir Vincent Evans.

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ILLUSTRATIONS.

DESIGN FOR A CHURCH IN MALTA.

OUR illustration shows the interior of Mr. Philip J. Marvin's fine design for a church in Malta, of which the exterior view appeared in "The Architect" of November 6, 1914.

The design is from sketches made some years ago, when it was proposed by the Admiralty to build a church at Malta.

The seating was required for about 1,200, and the plan consists of nave, transepts, chancel, aisles, chapel, baptistry, and vestries, the total length being 250 feet, the width across the transepts 160 feet, and across the aisles 60 feet, the large dome being 60 feet diameter.

The materials used would have been local stone, which is quarried and worked very cheaply in Malta, and the domes would have been constructed of reinforced concrete.

The drawing now reproduced was hung in the Royal Academy Exhibition of last year.

COUNTRY HOUSE FOR U.S.A.

THIS house is planned by the architects, Messrs. Poynter & Wenyon, to suit a site in the Eastern States of the U.S.A., on sloping ground facing south-west, and overlooking a broad well-watered valley, with mountains visible in the far distance. The building is to be faced with thin red bricks, of the current American size—which is the same as that of the bricks used here in the eighteenth century—and is designed to be in harmony with the American Colonial style, in which the proportions of the orders—modified by the use of wood—are slenderer than those usual in this country at the corresponding period. As will be seen from the perspective view and small plan accompanying it, the house is provided with ample porticos on the east and west sides, as well as the main portico on the south or garden front. The principal rooms on the entrance floor, which include—besides the staircase hall and a long corridor or gallery—a hall two storeys high, about 90 feet by 30 feet, a drawing-room, and large library connected by a square salon and a dining-room, are all connected by wide sliding doors, so that they can, on occasion, be thrown into one suite. There is also a large study for the master of the house, well isolated from the other rooms, and with a separate entrance from the outside. The basement, which, owing to the rapid fall of the land, is above ground on the south and west sides, is planned to contain a billiard room, gymnasium, and swimming bath, as well as the usual offices. There are two storeys of bedrooms.

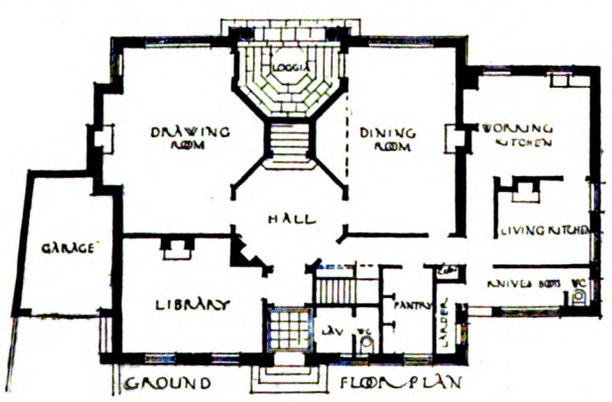
The slope of the site admits of the laying-out of terraced gardens, with their lines arranged in harmony with the main axial lines of the building.

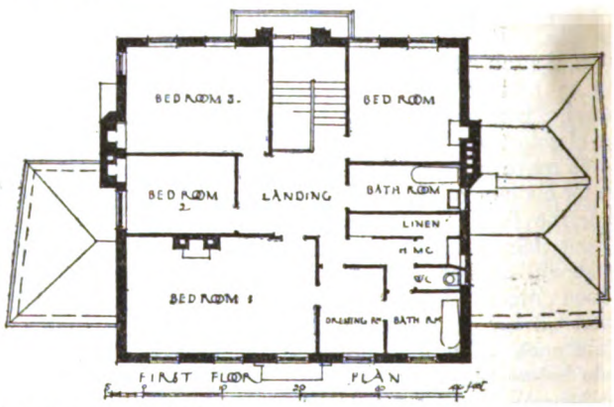
With regard to the interior, the endeavour of the designers has been to give, in addition to the stateliness demanded by a house on a large scale, a combination of whatever is best as regards comfort and convenience that can be found in English and North American house planning.

The drawing reproduced was exhibited at the Royal Academy last year.

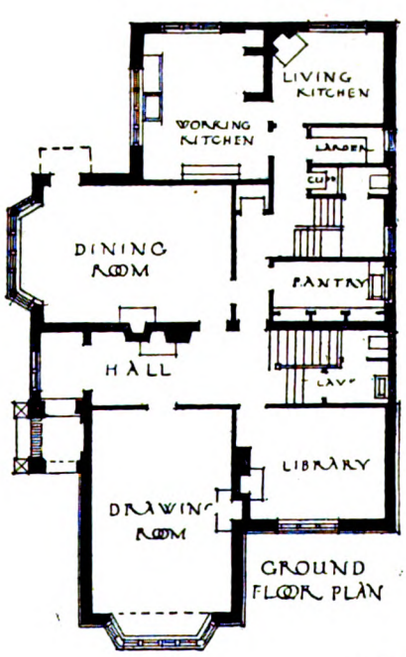
HOUSES AT HAMPSTEAD.

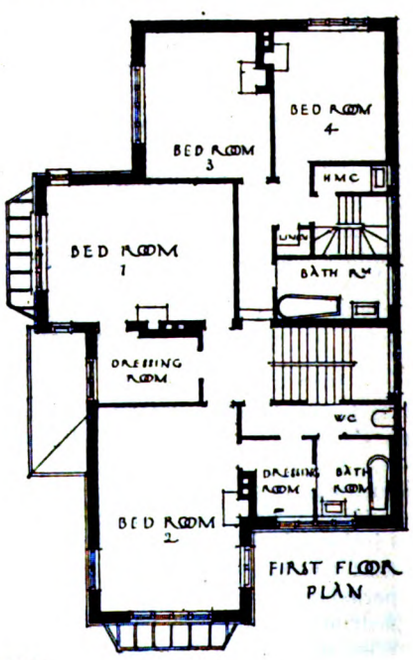
THESE houses in Frognal Lane and Greenaway Gardens, Hampstead, have been erected in 1913 to 1915 by Mr. G. W. Hart.





ERSKINE HOUSE, GREENAWAY GARDENS.



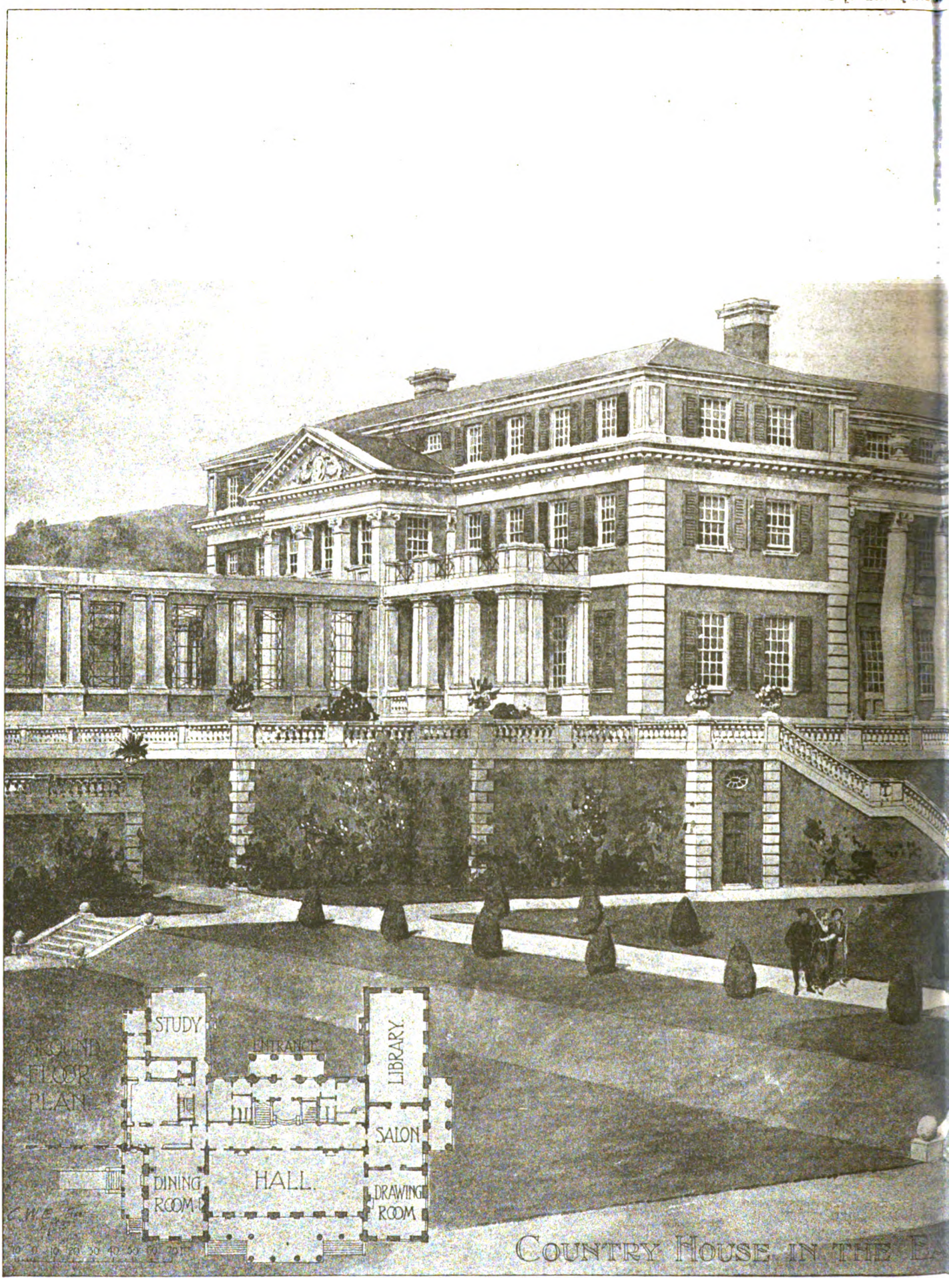


GREENAWAY CORNER.

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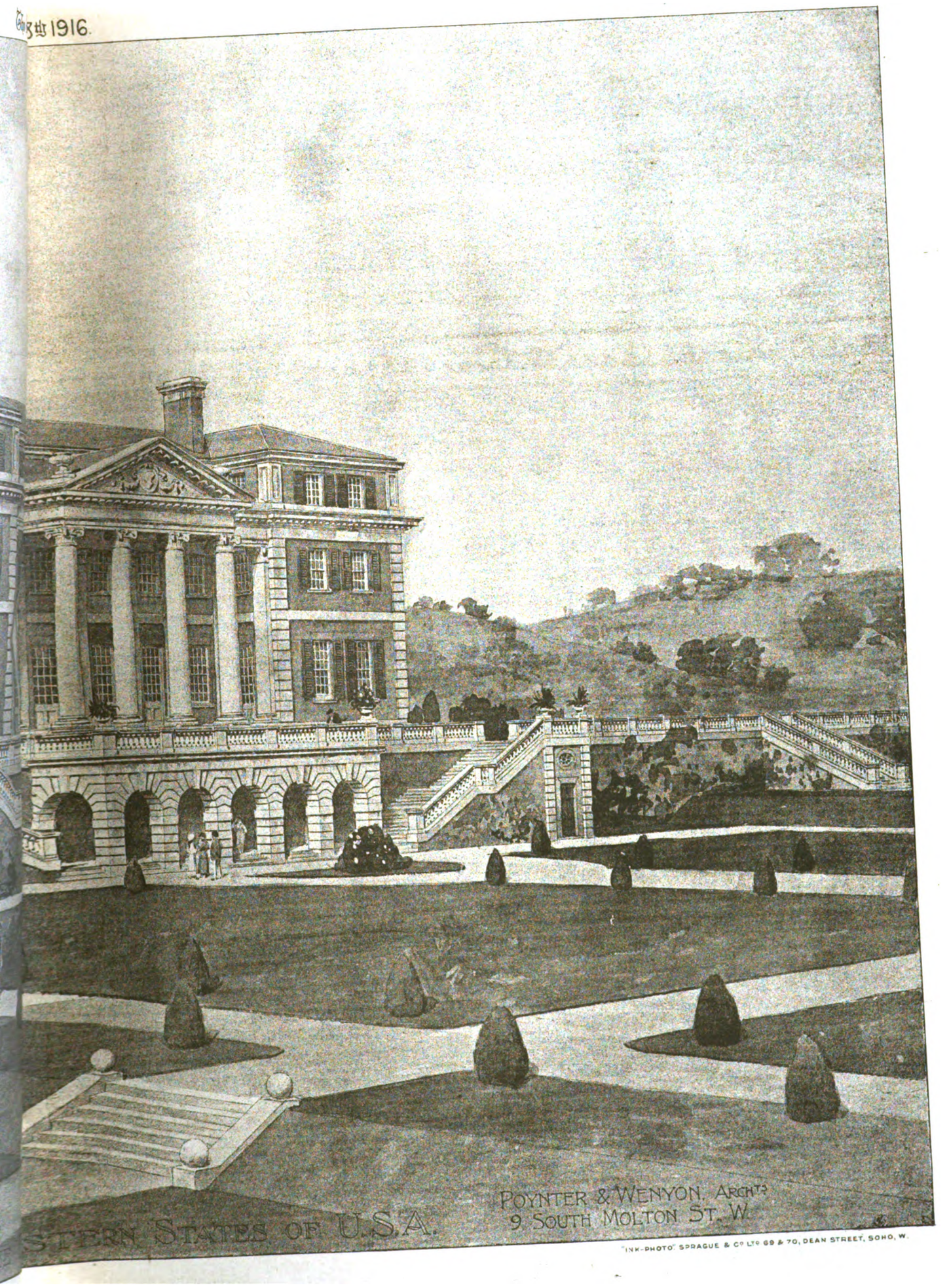
GROUND FLOOR PLAN

COUNTRY HOUSE IN THE E

(Royal Academy Exhibition, 1915.)

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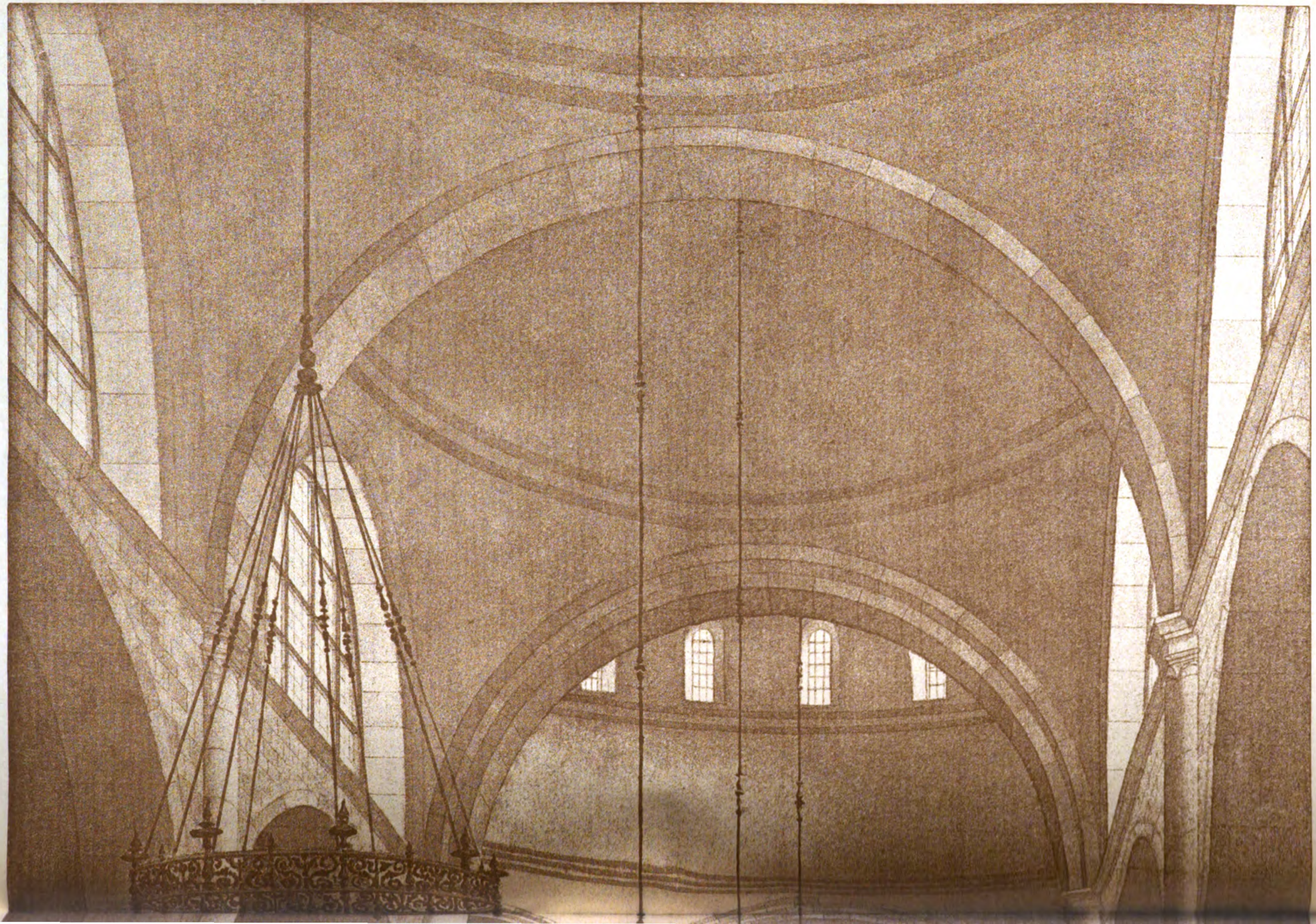
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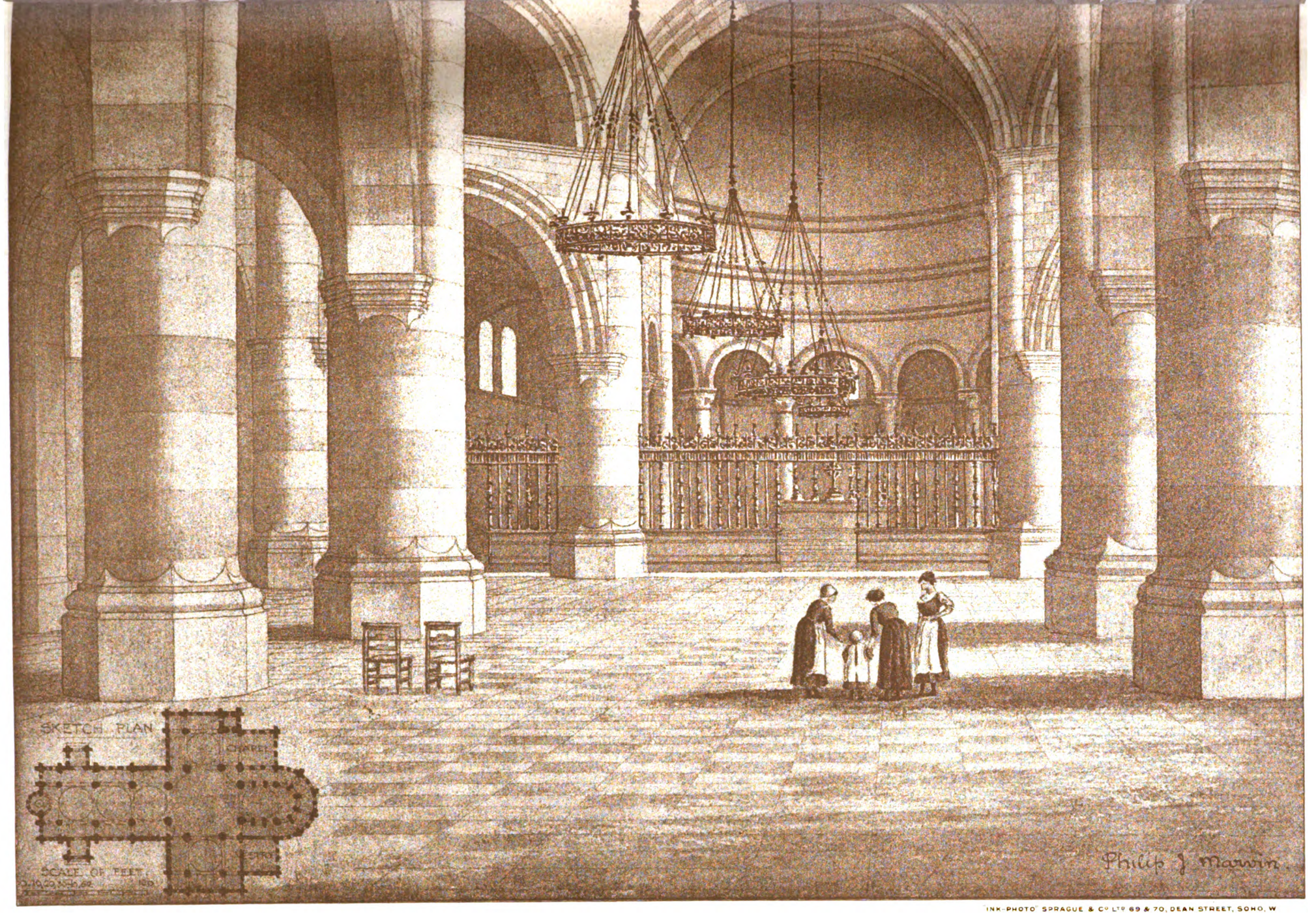
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DESIGN FOR A CHURCH IN MALTA.

By Mr. PHILIP J. MARVIN, Architect.

(Royal Academy Exhibition, 1915.)

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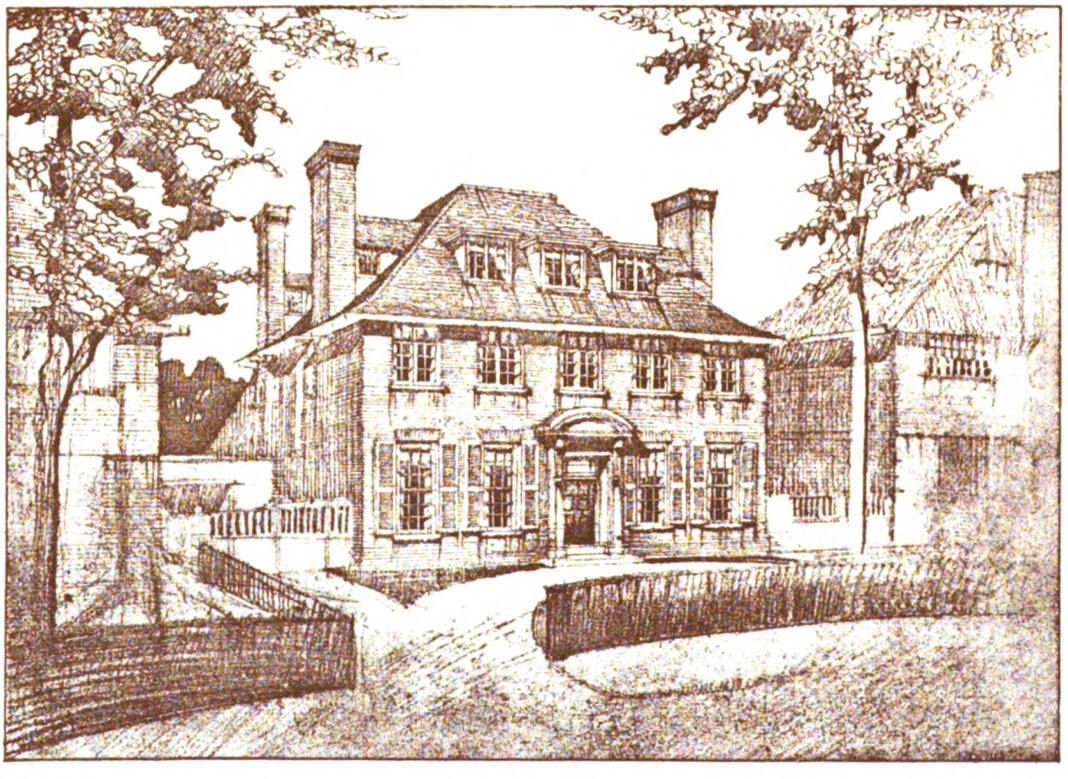
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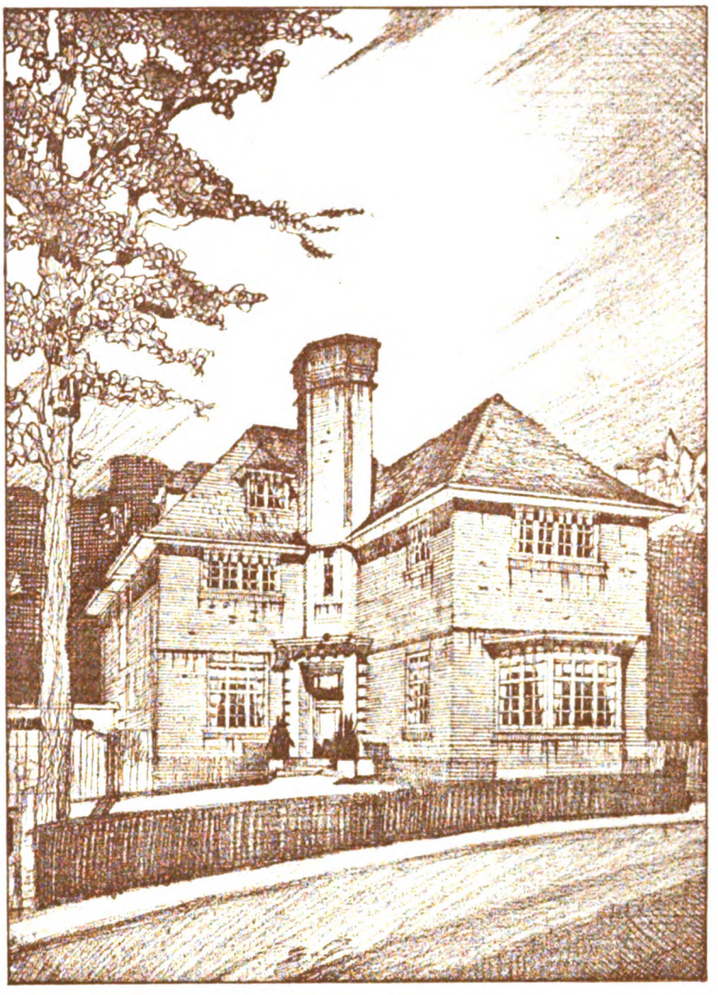
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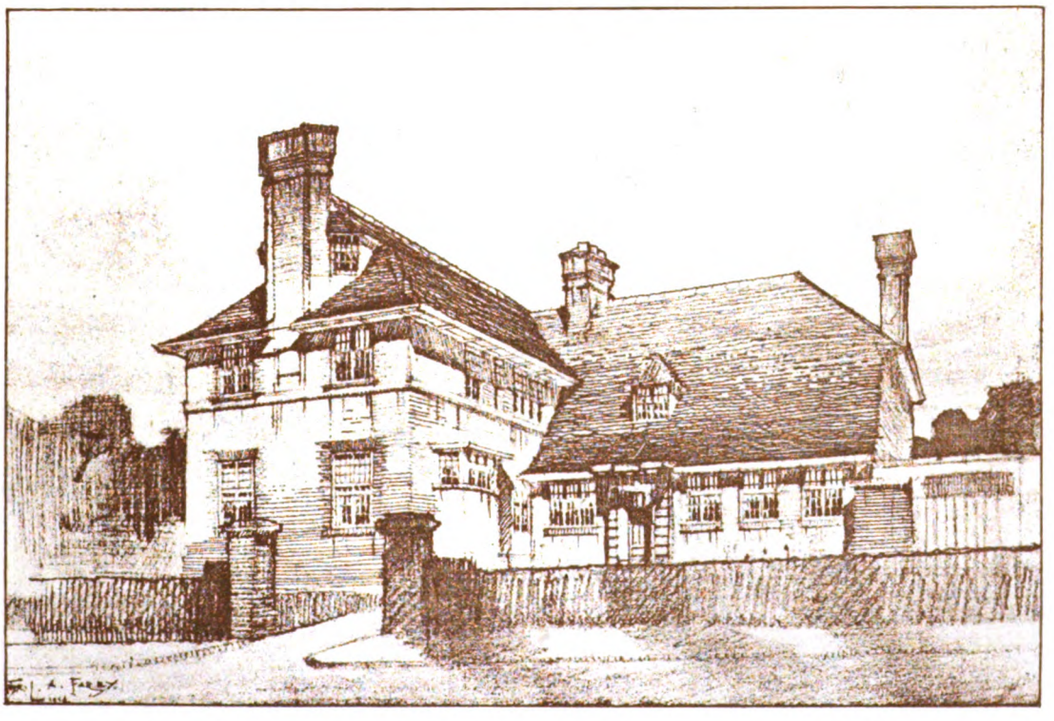
(Royal Academy Exhibition, 1915.)





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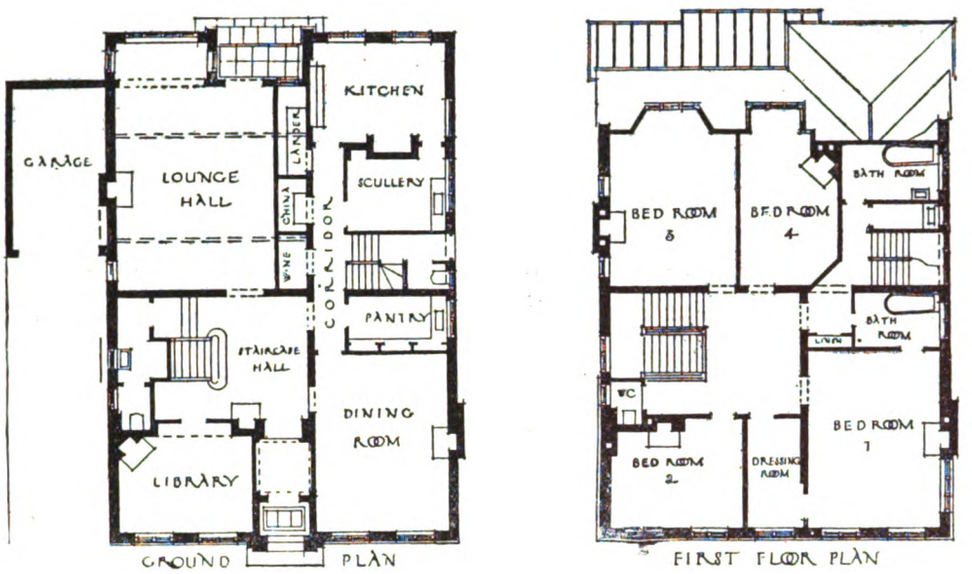


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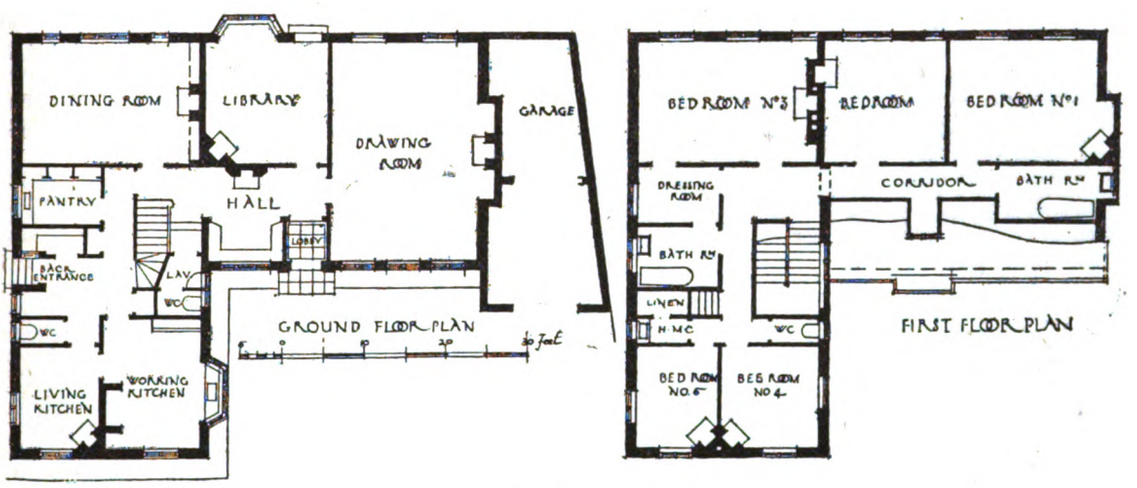
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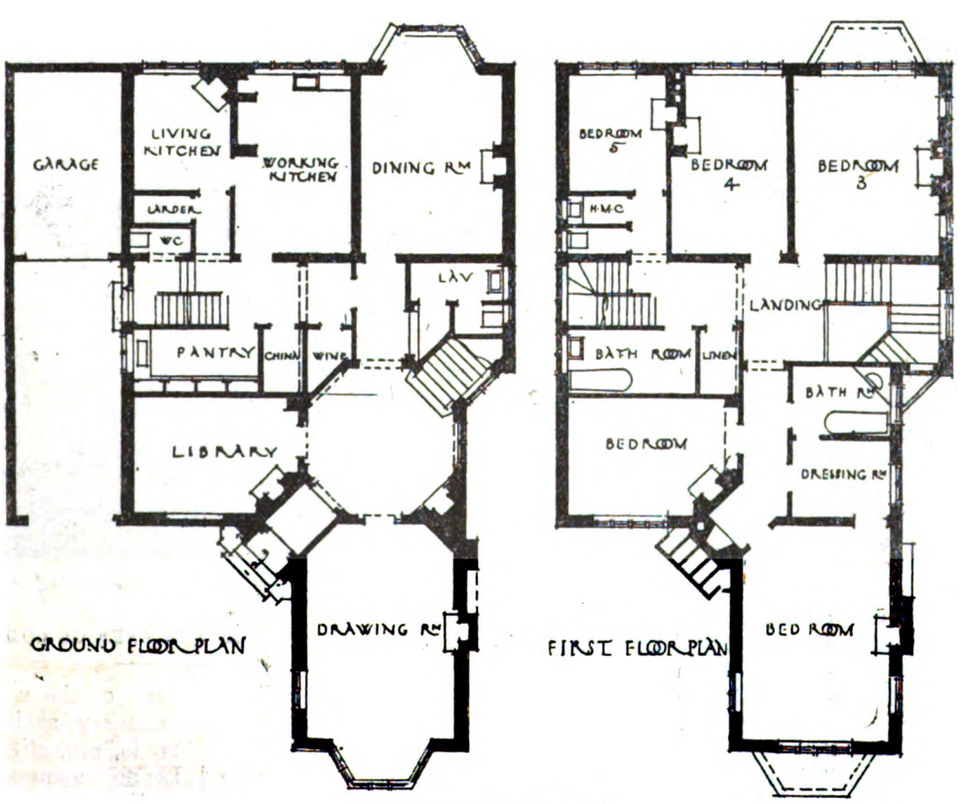
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TRAMORE.



VARLEYS.



CORNER CHIMNEY HOUSE.

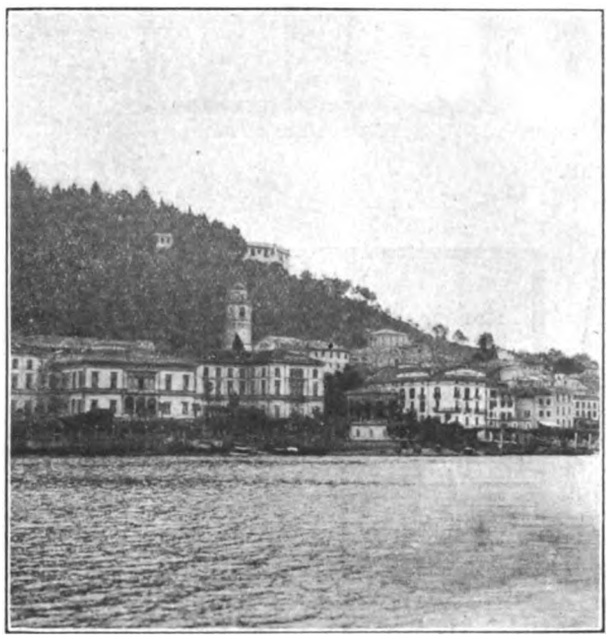
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AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—VII.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

THE town of Menaggio with its 1,800 inhabitants, commands a fine view of a portion of the Lake of Como and of Bellagio, the favourite haunt of the tourist. The peninsula of Serbelloni, upon which stands Bellagio shining brightly in the sunlight, separates the Lake of Como from the Lago di Lecco, and at the Punta di Bellagio the south-west and south-east arms of the lake are joined.

Immediately opposite to the left of Bellagio stands the small town of Varenna, snugly ensconced beneath the shadow of the hill. On the lake to the south stands a picturesque villa known as the Villa Mylius, and to the



BELLAGIO, LAKE OF COMO.

right from Porlezza, Loveno sopra Menaggio is ascended, and near the church is situate the Villa Vigoni, also the Villa Massimo d'Azeglio and the Villa Garovaglio.

From here, after passing through Broglia to Acquaséria, the Cima la Grona may be ascended, and from a height of about 5,700 feet a magnificent view of the Lake of Como and the eastern arm of the Lake of Lugano is obtained.

There is at Cremia a very fine church, San Michele, with an altar-piece by Paolo Veronese. An old church, San Vito, to the north of Cremia, contains a fine Madonna and Angels by Borgognone. Menaggio is a pretty little place principally consisting of numerous hotels with accommodation for the large number of visitors residing there during the holiday seasons, more especially during normal times.

Menaggio has also a large silk factory.

After the beautiful scenery round about Lugano and its lake it is exceedingly difficult to find words to adequately express the beauties of the Lake of Como. Wherever one turns there is beauty. Nature in her caprices appears to have been most kind; there is beauty in outlines, in atmospheric effects and in the gorgeous colour effects. Words are incapable of expressing the wonderful scenic and artistic beauties and interests in this most favoured province of Italy.

Apart from its exceeding beauty of situation, there is nothing of great interest to detain the traveller in Menaggio. The old Castle of Menaggio, of which very little remains, was in its time a famous fortress of great importance and strength. Continuing the study of the Lake of Como, it is considered by many whose opinions are of value, that this lake, known by the Italians as Lago di Como, is the most beautiful of all Italian lakes. As with the Lake of Lugano, but to a considerably larger degree, numerous villages and exceedingly fine villas (some of considerable size) of the Milanese aristocracy are scattered about its banks. These villas are surrounded by the most beautiful of flower gardens and vineyards.

The mountains round about the lake rise to a maximum height of about 8,500 feet, and add a sublime grandeur to the whole situation.

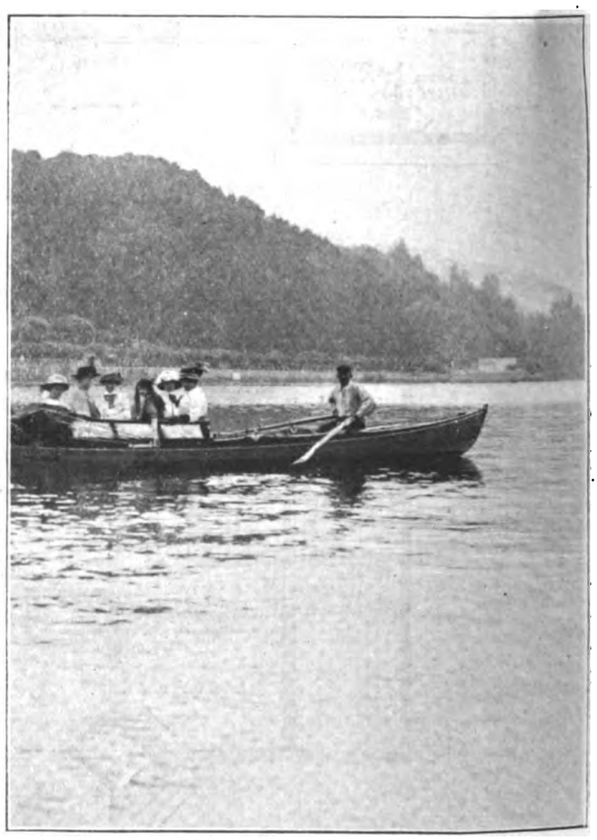
This lake is from the city of Como to the northern extremity about thirty miles long, and its greatest width between Menaggio and Varenna is nearly two and a half miles. Its total superficial area is about sixty miles.

In a corner of the lake, as in the case of the Lake of Lugano, a couple of dangerous-looking torpedo-boats are kept, to give chase to the smugglers who carry on a very lucrative trade on this lake. The close proximity of the Swiss frontier renders the running of small cargoes of contraband goods comparatively easy work.

The taxing of the many articles necessary for daily consumption, as well as luxuries, has set up a condition of things here worthy of the serious consideration of the advocates of systems of protection for our own country.

Although this very profitable business is apparently carried on under nearly approaching ideal conditions, yet the ill-gotten gains of those who carry on the trade are immediately squandered in the wine shops and other places perhaps worse, and the members of the community carrying on this trade are, by sheer force of up-bringing, and by the very nature of their calling, not by any means desirable citizens.

On the west bank of the lake south of Menaggio are Cernobbio, a fairly large village surrounded by a number of palatial residences, and a number of smaller places with villas and their beautiful richly coloured lake gardens and terraces enclosed by fine balustraded walls,



ON THE LAKE OF COMO.

rising perpendicularly out of the waters of the lake, ornamented with fine statuary at intervals—Argegno, and then the Punta d'Avedo, projecting far into the lake between Campo and Lenno, upon which promontory stands the Villa Arconati, gleaming brightly in the pitiless sun which beats upon it.

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Passing Lunno lying in the little bay, Tremezzo, the capital of Tremezzina, the garden of Lombardy, is reached, lying at the foot of Monte di Tremezzo, with its beautiful gardens on the lower slopes of the hills and with the surrounding country rich in olive gardens and vineyards.

This part is notoriously fertile; lemons and semi-tropical fruits grow abundantly here.

From Tremezzo a glorious avenue of trees joins up with Cadenabbia, passing the famous and wonderful Villa Carlotta, surrounded by its magnificent woods and perfect gardens. This villa is undoubtedly one of the sights of the Lake of Como, and all travellers visiting this district are expected on no account to miss visiting this world-renowned mansion.

Small rowing boats are to be hired at Menaggio, and this is a very enjoyable mode of visiting this particular beauty spot on the lake.

The Villa Carlotta, which is purely Italian in character, became the property of Princess Albert of Prussia, to whom it was sold by the widow of Count Sommariva. The name was then changed from Villa Clerici to Villa Carlotta, and it afterwards became the property of the Duke of Saxe-Meiningen.

The entrance to the villa through a fine pair of wrought-iron gates and two flights of wide noble steps is very impressive, framed as it is with prolific growth of roses and climbing plants. The gardens are specially unique in character, containing trees of almost every variety and of almost every country, and even grasses from all parts of the world, from the thick bristly Japanese to the fine silky English grass, azaleas of all colours, lilies, geraniums, and masses of roses of every conceivable kind, quality and hue.



CLOUDS PASSING THROUGH THE VALLEY BELOW GENEROSO, WITH SNOW-CLAD PEAKS IN DISTANCE.

One of the illustrations provides a faint idea of perhaps the most wonderful growth, in one of the shady dells or ravines in this beautiful garden; quite tropical in character and might almost be a little piece from the heart of an African jungle. The song of the birds, added to the scented air, completes the most harmonious setting of this delightful residence.

A fountain flinging its waters in a feathery mist high into the fragrant air adds to the perfection of the whole scheme. Near the entrance stands a white marble chapel which was, however, not sold with the villa to the Princess Albert of Prussia. The interior of the chapel contains good pieces of sculpture and in the vaults beneath rest the remains of the members of the Sommariva family.

The interior of the villa is well worth careful inspection, and contains amongst other valuable works



LAKE OF LUGANO FROM SUMMIT OF GENEROSO, SHOWING LAST REMNANTS OF DISAPPEARING CLOUDS.

the original sculpture group of Cupid and Psyche by Canova.

There is also a very fine frieze by Thorwaldsen round the four walls of the saloon, executed to the order of Napoleon I., and representing Alexander the Great entering Babylon in 323 B.C. The frieze is executed in marble, and £14,000 was paid for it by the former owner of the villa in 1828.

Other sculpture includes Mary Magdalen and Venus by Canova. The billiard room has also a very fine frieze in marble by Thorwaldsen.

The Villa Carlotta stands upon the west bank of the Lago di Como, close to Cadenabbia, and was built by Giorgio Clerici in 1747, and became the property of Princess Albert of Prussia in 1843, after whose daughter Charlotte (Duchess of Saxe-Meiningen) it is now named.

The climatic conditions in this part are such that oranges and lemons are grown in the gardens, as well as cacti and Australian ferns.

Cadenabbia is a small place about two miles to the south of Menaggio, situate in one of the most sheltered positions on the Lake of Como. Numerous picturesque villas are dotted about the vicinity. The Madonna di San Martino, a little church, stands upon the hill half-way up the rock of Il Sasso, which rises 2,790 feet high behind Cadenabbia. The Monte Crocione, from the top of which a magnificent view is obtained, rises 5,345 feet high to the west, and a fine view of the Alps of Valais

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is obtained from the summit of Monte Galbiga, 5,567 feet in height.

Passing Menaggio on the west bank, from which may be reached the little bay of Nobiallo (the station for the torpedo-boats before referred to), the village of Nobiallo is worth a visit, a short walk bringing one to a small piazza surrounded by stately cypress trees of great girth and height, and here stands a quaint little church, Santa Maria della Pace.

After passing Acquaséria and Donga, the birthplace of Cardinal Michele Ricci, Gravedóna is reached at the mouth of the gorge of Liro.

A magnificent residence, the Palazzo del Pero, is situate here, one of the many palatial erections with which



SOLITA SERBELLONI, BELLAGIO, LAKE OF COMO.

these parts abound. This Palazzo was erected in 1586 by Pellegrino Tibaldi, and is a roomy extensive building with four towers.

Next to the ancient church of San Vincenzo, the crypt of which is the only remnant of the original church said to date from the fifth century, stands the Baptistery of Santa Maria del Tiglio, a twelfth century structure with its campanile.

These before-mentioned two edifices are small but very famous, and stand upon the grassy plateau on the very edge of the lake. This town is of very ancient origin, and was the capital of the Republic of the Tre Pievi, and during the tenth and eleventh centuries held an important position. Its castle was of great strength and dominated the bay and the town.

The Palazzo del Pero, before mentioned, is a vast place, and was built for Cardinal Gallio, and is seen for many miles distant. It is supported by high buttresses rising directly out of the waters of the lake, and is altogether a fine architectural pile, with its massive square towers and noble proportions. On the opposite shores of the lake stands Cólico, containing no points of special interest to detain the traveller; in fact, the desire on the part of the visitor is to get out of what is a dull dreary place as quickly as possible. It lies near the mouth of the Adda.

This river enters the Lake of Como at the upper extremity, forming a large delta by its deposits, which separate the Lago di Méxzola (at one time the north bank of the Lake of Como) from the Lake of Como, and makes its exit from the lake at Lecco or near there.

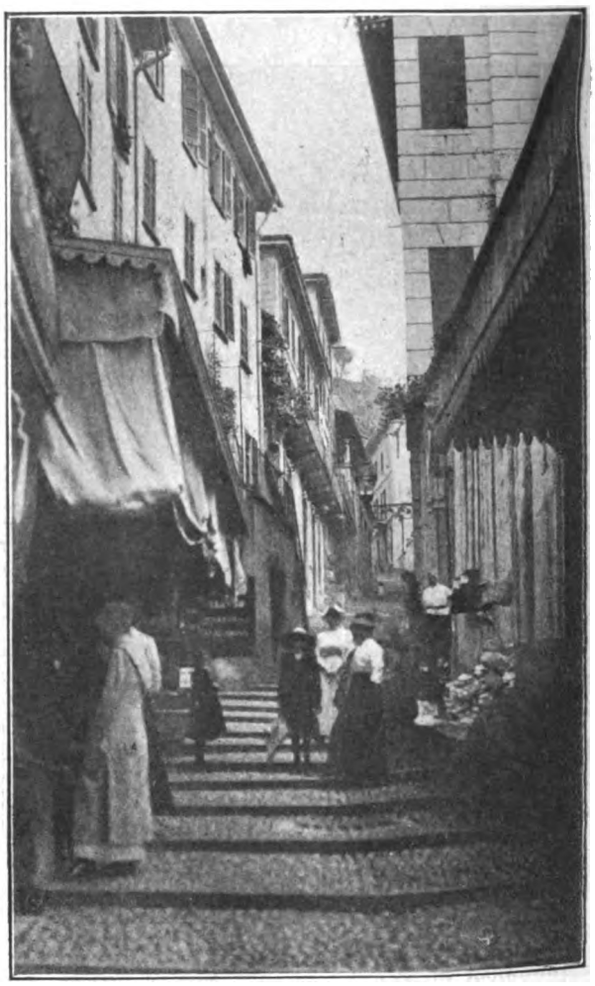
The Adda abounds in splendid trout, and is a fast flowing stream. Commencing at Cólico the eastern shores of the lake are skirted, and soon Piona with its little bay, called the Laghetto di Piona, separated by the Lago di Piona promontory, is reached.

Il Chiostro di Piona, an interesting old cloister, quite a picturesque structure, is tucked away in this quiet little spot, and is of exceptional interest to the architectural student.

Olgiasca and Dorio, places of no especial interest are passed, and then Corenno with its ruined castle is worth a little attention and exploring, quite apart from the special glories of its suroundings.

To the south stands Bellano, a little place carrying on quite a considerable trade, and having a number of large silk factories. Bellano stands at the entrance of the Val Sássina, a broad valley lying at the base of the Grigna chain, and watered by the Pioverna. The lords of Bellano in the fourteenth century were the Visconti of Milan.

Varenna, further south, is in a superior position, as it faces south, and has the benefit of the sun's rays all day long during most of the year. It is situate at the mouth of the Valle d'Esino, and is literally surrounded by the most beautiful of gardens, such as are only seen



SOLITA SERBELLONI, BELLAGIO (LOOKING UP) LAKE OF COMO

in these lake-side districts, and has in addition a magnificent view of the lake and of Bellagio on the opposite bank.

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There are many black marble quarries at Varenna and numerous stately mountains in the vicinity including Monte Grigna Settentrionale, about 7,900 feet high, quite tempting to the traveller anxious to climb such wonderful heights.

A lonely tower stands upon the richly wooded hill, underneath which snugly rests the town, this tower being the only remaining relic of a castle of great historical interest.

A little further south the Lago di Lecco is entered, being the south-east arm of the Lake of Como. This portion of the lake being exceedingly deep (maximum depth 1,345 feet) and narrow, inundations are not uncommon.

This arm of the lake is not much visited because of the turbulent state of the waters rendering the trip in a small boat uncomfortable; but, although the scenery is fine, there is not anything of very particular interest to call for the neglect of the south-west arm of the Lake of Como, when time is limited.

There are, as before, numerous fine villas on its banks, and at the Punta di Bellagio stands on one of the most delightful sites in upper Italy the small town of Bellagio, with some 1,100 inhabitants. This place is seen from almost any point on the main area of the lake, rising out of the waters almost perpendicularly, with its thickly wooded banks surmounted by the Villa Serbelloni, sur-



CORSO VITTORIO EMANUEL, BELLAGIO, LAKE OF COMO.

rounded by its park containing very old and stately palms.

Bellagio is a pretty little town crowded with quaint narrow winding streets full of picturesque architectural morsels.

The east bank of the lake is traversed quickly, passing artistic villas standing out clearly upon the banks above the rocky creeks and clear deep waters of the lake. Perhaps next to the Palazzo Gallio the Villa Pliniana should certainly be visited before bidding adieu to this marvellous lake.

This is an immense structure of considerable architectural pretensions and historical interest. Situated at the base of the great mountains which over-shadow it in the Bay of Molina, it was erected by Count Anguissola in 1570. This villa derives its name from a spring having the peculiar character of changing its level every day.

The tour of this lake is so full of items of great interest that it is exceedingly difficult for even a portion of such to be retained in one's mind, excepting as



TROPICAL SCENE FROM GARDEN OF VILLA CARLOTTA, LAKE OF COMO.

a hazy recollection. The crowding together in such a comparatively small area and within such a small compass of time of such scenes of picturelike towns, luxuriant gardens, giant mountains with their snow-clad peaks, feathery waterfalls, roaring gorges, with the sprinkling of palatial mansions, looking in the distance like unreal little painted houses, leaves a memory which, although at times very hazy and indistinct, yet is impressively lasting.

(To be continued.)

MR. REGINALD BLOMFIELD, R.A., F.R.I.B.A., lectured on Wednesday last at the Ashmolean before the Oxford Architectural Society on "Atavism in Architecture."

THE Royal Academy of Arts give notice that the President and Council will elect one "Cooke" annuitant. Applicants for the annuity, which is of the value of £35, must be painters in oil or water colour, not less than sixty years of age, and in distress from age, sickness, or some other cause. Forms of application can be obtained from the Secretary, Royal Academy of Arts, Piccadilly, W. They must be filled in and returned on or before March 4.

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BRITISH INDUSTRIES FAIR.

THE British Industries Fair will be held in the Victoria and Albert Museum, South Kensington, London, S.W., from February 21 to March 3, and, in order to avoid interference with the production of munitions of war, exhibits at this year's Fair have been carefully limited to the following trades: Printing and stationery; china, earthenware, and glass; fancy goods; and toys. Exhibitors have been obliged to obtain permission to exhibit from any Government Departments with which they have contracts.

About 100,000 invitations to the Fair have been issued by the Board of Trade to wholesale buyers in this country and abroad. Of these over 20,000 were sent out to oversea firms some time ago, and further invitations were distributed by British Consuls and Trade Commissioners. Wholesale buyers in the trades in question who have not received invitations should apply to the Board of Trade, British Industries Fair, 32 Cheapside, London, E.C.

The Fair this year is being held at South Kensington in the Victoria and Albert Museum, the greater part of the ground floor of which has been temporarily cleared of its permanent collection, and is now occupied by the stands of the exhibitors.

Successful as last year's Fair was from the point of view of exhibitors and buyers alike, this year's Fair promises to be equally successful, inasmuch as the trades included are very well represented. It is anticipated that one of the most interesting and useful features of the Fair will be the inclusion among the exhibits of excellent specimens of articles resembling those which the Germans used to supply in large quantities, both to this country and oversea markets. Notwithstanding the great demand on many works for the manufacture of munitions, it is very satisfactory to note that manufacturers as a whole are keenly alert to the extensive markets open to them, providing the necessary attention is paid to the question of cheapness, design, colour, utility, and so forth. There is plenty of evidence that, in spite of the fact that most works are now running at full pressure, manufacturers are not letting the grass grow under their feet, and plans are being laid with enterprise and discretion to extend their business on the cessation of hostilities.

Arrangements similar to last year's are being made for the assistance of buyers. Interpreters will be provided, there will be Board of Trade offices in the different sections at which trade inquiries can be made, special provision has been made for writing and reading purposes, a large smoking-room and lounge has been erected in the quadrangle, and the catering is under the management of a well-known firm.

EDINBURGH ARCHITECTURAL ASSOCIATION.

ON Thursday, the 3rd inst., the Edinburgh Architectural Association met in the lecture hall of the College of Art, when a lecture was delivered by Mr. W. T. Oldrieve, F.R.I.B.A., on "A Recent Visit to New Zealand and the South Sea Islands." Mr. T. F. Maclennan, A.R.I.B.A., president, occupied the chair, and there was a large gathering.

The subjects dealt with by Mr. Oldrieve and the views shown related principally to the architecture typical of the places visited, and only to what was particularly beautiful or phenomenal in nature. The architecture of the Maoris was illustrated by slides from photos of their dwellings and guest-houses, and a series of wood carvings showing both ancient and modern workmanship. A fine specimen of the application of an ornamented war canoe to Maori house architecture was shown in a view of a "pataka," or food-house, which was built out of a large war canoe on the shore of Papaitonga Lake. A plan of a typical Maori "whare," or dwelling-house, with details of its construction, was explained, as also a plan of a fortified Maori stronghold, or "pa." The construction of the typical colonial wood-framed bungalow was illustrated at various stages of construction as seen by the lecturer, and some attractive finished specimens were shown. The granites and building stones of New Zealand and the extraordinary variety of New Zealand timber trees were also referred to. The views of houses in Fiji, Tonga, and Samoa embraced both native and modern types, a remarkable difference being apparent between the native type of "palace" in which Tamassesse, High Chief of Samoa, was interviewed, and the modern-looking wood-built palace of King George II. of Tonga. The lecture, which was thoroughly enjoyed, was concluded by showing a selection of views of public buildings in Monte Video.

A collection taken in aid of the Red Cross Society amounted to £3 13*s*. 10*d*.

ULSTER SOCIETY OF ARCHITECTS.

THE annual meeting of the Members, Associates, and Students of this Society was held at the Society's Rooms, 9 Howard Street, Belfast, on Thursday, February 3. The chair was occupied by the President (Mr. N. Fitzsimmons), and amongst those present were Messrs. R. M. Young, J.P.; W. J. Gilliland, H. Seaver, G. Sands, W. C. Maxwell, A. B. Dobson, and T. W. Henry, Hon. Secretary.

The minutes of the previous general meeting having been read, confirmed, and signed, the hon. secretary submitted the annual report of the Council, which was adopted on the motion of the President, seconded by Mr. R. M. Young. The report stated:—The matter of the affiliation of your Society with the Royal Institute of British Architects has been constantly before your Council. Voluminous correspondence has passed between the two bodies during the year, with the result that the Council of the Institute has appointed a committee to deal with the matter at an early date, and your Council hopes that ere long the long-deferred alliance may be an accomplished fact. Your Council has had again to draw the attention of the various County, District, and Urban Councils in Ulster to the practice, prevalent, of their surveyors and assistants engaging in private practice, which is most unfair to private practitioners, who are ratepayers, and is not to the public interest. The Architectural School in Belfast is now in working order, and has been recognised by the R.I.B.A., and its prospectus given a place in the Institute Calendar for the current year. We are pleased to know that up to the present the fourteen members of the Society who are fighting on behalf of our country are alive and well; and it is our sincere hope that ere another year brings round our annual meeting, we may welcome them home again with our victorious armies, after having inflicted on the ruthless Hun, with his confederates, the punishment fitted to his crimes against the laws of God and man, whose wanton destruction of life and so many irreplaceable examples of architecture and gems of art in the countries of our Allies, temporarily under his heel, has excited the indignation of all lovers of art throughout the world and the abhorrence of all civilised nations.

The Hon. Treasurer, Mr. H. Seaver, submitted the financial statement, which showed the Society to be in a very sound condition.

Mr. Gilliland moved, and Mr. Sands seconded, a resolution that the operation of Paragraph 1, Section V., of the By-laws be suspended temporarily. This was passed unanimously. The effect of this resolution is that the Council of 1915 remain in office during 1916, without re-election, to deal with various matters, which are in abeyance, affecting the Society.

The attention of the members was again drawn to the practice prevalent in Ulster of Surveyors and Assistant Surveyors to County and District Councils engaging in private practice against the interests of the ratepayers, and resulting in grave injustice to private practitioners. The Council was authorised to take any steps they con-

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sider necessary in specific cases in the interests of the profession.

This concluded the business, and the meeting terminated.

GLASGOW INSTITUTE OF ARCHITECTS.

A QUARTERLY general meeting of the Institute was held last week within the rooms, Elmbank Crescent, Mr. John Watson, F.R.I.B.A., president, in the chair. The Secretary reported the proceedings of the Council with regard to the matters dealt with since the previous general meeting. It was also reported that the President had been appointed as assessor from the Institute on the examining jury of the Glasgow School of Architecture, in room of Colonel J. B. Wilson, whose term of office had expired. The meeting took into consideration the regulations for contracts for building works in Scotland which were issued recently by Sir G. R. Askwith, and these were fully discussed, and explanations were given regarding certain of the articles. The proposals of the Library and Education Committee with regard to student members of the Institute were brought before the meeting, and approved of. It was agreed that all Fellows and associate members who engage apprentices or pupils should notify the secretary, so that a register could be kept.

FACULTY OF SURVEYORS OF SCOTLAND.

THE annual reports of the District and General Councils and the Examining Board for the year ending December 31 last, and statements of accounts are issued. The report of the General Council states that the membership is satisfactory, and contains a Roll of Honour of Fellows and apprentices and assistants serving with H.M. Forces. The funds at December 31 amounted to £1,204 6s., being an increase over the preceding year. A memorial has been presented by the Faculty to the Minister of Munitions in connection with the position of surveyors with regard to Government contracts. During the past year a national mode of measurement for carpenter and joiner work has been agreed to and issued, and a mode for measurement of mason work has been prepared, and subject to adjustment on certain items has been agreed upon by architects, surveyors, and contractors. Conditions of contract have been issued by Sir George Askwith, K.C.B., K.C., to whom whom they had been referred by the architectural associations and building trades. The General Council comment strongly on a note which Sir George Askwith has prefaced to these conditions on the ground that the note may give a wrong impression on the position taken up by surveyors in the course of the discussion, and that misleading inferences may be drawn from it as to the functions which Scottish schedules of quantities have fulfilled in the past. The Council state their opinion that it can be established that Scottish schedules of quantities more precisely represent the work to be carried out than those prepared in any other part of the country. The report of the Examining Board states that diets for the preliminary examination were held in April and October, and for the intermediate and final examinations in April. Candidates who have passed the whole of the examinations will come up for election as Fellows at the annual meeting on 25th inst.

THE annual meeting of the London and Middlesex Archæological Society was held last week at the Bishopsgate Institute. Colonel M. B. Pearson, who presided, said the Society had fairly sustained its activities during the last year. Some members had come to the conclusion that if the Society was not active they would have to resign. Personally he was in favour of keeping things going, and considering the difficulty in getting members to read papers and in holding meetings, he thought their record was satisfactory. The accounts showed that the amount in favour of the Society was £113, as against £121 in the previous year, but it should not be forgotten that the value of their investments had decreased £17.

DILAPIDATION PRACTICE: SOME NOTES AND SUGGESTIONS.*

(Concluded from last week.)

By CHARLES F. SLATER, F.S.I.

A VERY clear and interesting statement of the law and practice on the subject of damage caused by occupation of premises by the King's Forces was put forward by our worthy President, Mr. John Henry Hanson, in his recent address (Transactions, Vol. XLVIII., Part I). I may perhaps be permitted to recall to you from Mr. Hanson's address the following words:—

"And, lastly, the matter is now dealt with under statutory regulations in which, save so far as may be contained in a general declaration of principle that interference should be limited to necessity, there is no provision or restriction in favour of owners, nor for payment of compensation as of right. Provision, however, has been made for such payment as of grace, the amount to be determined by a Royal Commission specially appointed to deal fairly and reasonably with the matter."

The obvious course with properties required for military purposes is the preparation of a schedule of condition of the premises at the commencement of the occupation, and this applies generally whether the property taken is urban, residential, or agricultural.

There is said to be a desire in some cases to shelve responsibility, but I have not experienced it. Petty haggling has twice come my way over decorations and furniture under agreements for tenancy by local commands, but the blame for that was less on the military authorities than on the newly-made officers, whose education in respect for the property of other people had been neglected.

Damage by the King's enemies, as you all know, was in the early stages of the war met by relief being given from Imperial funds, a committee being appointed by the Treasury to investigate the damage to persons and property sustained by the bombardment of the Hartlepools, Scarborough, and Whitby by German warships, the air raid on the Norfolk coast, and the air raid on Colchester and the neighbouring district. That was withdrawn last summer, and a system of Government insurance inaugurated.

So far as dilapidations go on premises that are insured, there is one point worthy of note. The Government insurance covers only the interest of the party assured. It is not sufficient, for instance, that a lessor should insure against damage by aircraft and bombardment if his lessee should be liable to him under the covenants of the lease, for in that case he would be compensated only to such an extent as he would not be entitled to recover against his lessee. I have heard of a case where Lloyds on a very open form of policy have taken the same line.

I am advised that it is necessary that in all such insurances the person assured should contract for himself and in trust for all other parties interested. Where not done in the first instance an endorsement of the policy will suffice.

Conflicting opinions exist on a lessee's liability to repair damage caused by the King's enemies. It is difficult to imagine that express covenants to repair will in such circumstances lose anything of their effect against the persons who have entered into them, especially as the contingency, however remote, could have been provided against by specific words in any covenant, and now, moreover, everyone has an opportunity to insure at relatively small cost.

The obviously fair course would have been that all such damage arising from a catastrophe that no one could have foreseen should fall upon the Imperial Exchequer so that the burden be distributed over the whole nation. Since, however, those responsible for the national funds have sought to meet the question in the

* Abstract of Paper read at the ordinary general meeting of the Surveyors' Institution, held on Monday, February 7.

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alternative of insurance, it would have been more consistent with a principle of equality of national burdens if the insurance had been made obligatory on all, and as far as buildings are concerned to cover all interests. Then those who by express or implied contract were bound to insure premises against fire should have been required to insure them against war risk, those bound to repay premiums on fire should be bound to repay on war risk, and so forth. Thus from Land's End to John o' Groats all would have contributed to the relief of those who through accident of situation were called upon to suffer.

Although these remarks on insurance are not altogether unconnected with dilapidations, I ask your indulgence for intruding them, since the matter is one of some urgency. My friend Mr. Sydney Smith has dealt very ably with the question in a Paper he read at the Auctioneers' Institute quite recently.

Contested cases on dilapidations would be much diminished in number and simplified in issue if landlords and tenants entered into their respective obligations with a full knowledge thereof and with expert advice on the buildings which were the subjects of their contract.

In the Transactions of this Institution covering the Papers of Judge Wheeler and Mr. Pilditch, and the discussions thereon in 1886, it was advocated by several prominent surveyors that a schedule of condition of premises should be taken at the commencement of each lease.

In the year 1903 the Royal Institute of British Architects issued a hand-book on dilapidations, in which they referred somewhat extensively to this question of a schedule of condition, and in which they gave models of repairing and surrendering covenants for embodying the same, together with a note of the practices obtaining in Continental countries.

The practice of attaching a report of condition of premises to a contract of tenancy appears to be growing very slowly, and I think one of the deterrent factors is that of the cost of preparing the same.

If every lease prepared by a landlord's solicitor were approved by the tenant's solicitor and had attached to it, if necessary, a plan and note of condition of premises at the date of the grant, there would probably be little or no occasion for dispute afterwards. Further, the repairing covenants would come under the review of the surveyors preparing the schedule, and an opportunity would thus be given of avoiding some of those mistakes which in the best of well-regulated offices may sometimes occur.

There are very few investments which can favourably compare with freehold and leasehold property, yet many serious losses occur to investors solely through neglect giving rise to dilapidation.

The terms of years' purchase governing the value of landed estate as distinct from the composite property of land and buildings is based largely on the element of indestructibility. So far as buildings are capable of preservation, and the extent to which in fact they are preserved, so far is the value of the such composite property maintainable without serious depreciation, assuming that the site and the buildings are adequately adapted to the purpose for which they are used.

It is clear that the question of upkeep of buildings is one of individual economy, and on reflection it will be seen that the question is no less one of national economy.

There has been during the last fifty years an enormous increase in the buildings erected in this country, and even now the requirements of the population for buildings in which to live and to work are not adequately met.

These buildings represent hundreds of millions of invested savings, yet their economical upkeep and care is for the most part without method.

Depreciation in value by dilapidation may arise through direct neglect of the owner himself, by indirect neglect such as through his tenant or through default of neighbouring owners.

Now it is evident that both the value and marketability of real estate, and especially of what I have called composite property, is affected very materially by cases which indicate a complete absence of a sense of responsibility by some to other members of the community so long as the letter of the law can be either barely observed or avoided altogether.

Owners of large estates generally appoint someone more or less qualified to look after them. This is comprehensible in the same way as a man employs an expert gardener if he wishes to get the best out of his garden.

But a man who puts his savings into property seems generally to rely upon and even take a delight in "managing" it himself, which frequently means letting it drift so long as the rent is paid until he comes up against some serious trouble.

It would be a bad day for ourselves and our kindred professions if we had to devote our attention to the collection of rents universally, which is what management often appears to amount to. But it would be much to the advantage of the general investor and also to his tenants if a system of regular expert inspection of buildings became more general.

It is the common practice of large owners like the City Guilds to have their properties inspected and reported upon once a year so that they are kept alive not only to the question of upkeep but to other matters affecting their investment. But the private investor who will spend £100 a year on a little garden is generally averse to an outlay of the few guineas that would keep him properly advised on his real estate investments.

By periodical inspection dilapidations which constitute a serious depreciation in fabric are frequently avoided altogether, or dealt with expeditiously and cheaply, and if the practice were more general the market for what is probably the best investment for thrifty people would be maintained in confidence instead of being regarded with some misgiving.

In the 700 odd pages of the Report of the Land Enquiry Committee there are some references to dilapidations. As these indicate some degree of legislative unrest it may be well to consider them.

On page 389 this Committee report on a "chorus of complaints," and they gave three illustrations of tenants' grievances:—

(1) "*Appropriation of tenant's improvements.*"

"Certain works were held on a sublease. There was a small piece of land in front, which was found to be a nuisance because roughs congregated on it. The sublessees approached their landlords, who were represented by a firm of solicitors in London, as to the taking in of this land; they in turn approached the freeholder, who offered to include the land in their lease for £3 per annum, whereupon they charged the sublessees no less than £30 per annum. The premises had been let to the sublessees on two consecutive leases, under which they occupied them for a period of thirty-five years. During the last nine years of this period they built sheds, &c., to the value of £6,000. When they determined the sublease, a claim was made for dilapidations of £650. This was settled by the payment of £218, in addition to a fine of £50, as provided in the current sub-lease for determining at the end of the first seven years."

The information given is not sufficiently clear for the understanding of politicians and other inexperienced persons to arrive at a just estimate of the facts. By careful study of the paragraph, and some little knowledge of the law and practice, further information is obvious, viz.: The tenants built the sheds, &c., for their own purposes, and not for the benefit of the landlords. The buildings costing £6,000 were presumably valueless for other purposes, since the lessees decided to determine their lease and pay a fine at the end of the first seven years rather than risk finding a buyer for it.

If this be the best instance available to the Land Enquiry Committee of this particular form of grievance, it would appear to indicate its non-existence.

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(2) "*Claim in respect of dilapidations although premises were to be demolished.*"

"A well-known firm of decorators and furnishers had a lease of premises in London on the X Estate. They desired a renewal of the lease, and approached the agent of the estate.

"It was agreed between the estate surveyors and the lessees that certain alterations and additions to the premises should be made. The terms for the new lease were almost settled when they were suddenly revised by the agent. The revised terms were unacceptable to the lessees, and they decided to remove at the close of the current term. The site had been taken by an hotel company. On obtaining vacant possession, the company proceeded to pull down the premises and erect an hotel. Although the premises were being demolished, the X Estate served the firm of decorators with a claim for dilapidations amounting to £591. The firm met the claim by informing the estate that, as their business was such that they could have done these repairs themselves, the amount was excessive. Ultimately the matter was settled by the payment of £350 to the estate."

The illustration here is also unfortunate. If the old lessees had settled instead of "almost settled" terms for a new lease, and had themselves transferred their interest subsequently to the hotel company at a good profit the case would not have been reported.

The particulars do not divulge whether in the transactions immediately following the disappointment of the old lessees any interchange of compliments between the parties made it difficult either to offer or to accept concessions that otherwise might have been made.

No surveyor is entitled to ignore the contract between lessor and lessee, and if the lessee has contracted to leave premises in repair he should be prepared to do so without grumbling. All the same, I have rarely found trouble in getting lessors to look leniently on such obligations where premises are coming down and in some cases to waive them altogether.

Some years ago I was instructed a few days before the leases expired to assess the dilapidations on a block of six shops. Each one of the tenants expressed surprise at my visit, and said they had been told by the lessor that as the premises were coming down shortly there would be no need for them to carry out their repairing covenants.

When I asked my client if this were the fact, he said, "Of course it is; I reckon that move was worth £1,000 to me—what do you think?" I gave the obvious if unparliamentary answer so readily that within a few seconds my client left me without saying "Good morning."

In the end he got about £100.

(3) "*Unreasonable claims for dilapidations.*"

"A firm occupied two premises under one lease, and had connected them by a small footbridge. Recently, just before the expiration of their lease, the freeholders served them with a schedule of dilapidations, which *inter alia*, required the removal of this footbridge. The amount claimed under this schedule of dilapidations was £52, although the freeholders intended to demolish the buildings on the expiration of the lease."

The illustration here given appears to refer to another case of demolition of premises, but it does not go on to say whether or not the lessors recovered the £52.

On page 471 two other illustrations of tenants' grievances are given concerning respectively (1) no set-off improvements and (2) tenants' risks in resisting claims for dilapidations under present law. From the report of the latter it would appear to be one of those cases where the machinery of the law was put in action on improper advice or possibly on some personal ground such as may occur in any other human affairs.

As to the former ("no set-off for tenants' improvements") it is well to record that "improvements" from the tenant's point of view are not always the same from the landlord's standpoint. Especially is this the case in business houses where these alterations most frequently occur.

An instance I have in mind is the case of five houses with shops in the West End in two separate ownerships, now awaiting tenants. The lessee spent a large sum in what he called improvements, whereby, in order to provide extra workrooms, three of the houses were deprived of their staircases, bathrooms, and their lavatory accomdation. The lessee failed, and left to his respective lessors the necessity of a great expenditure to make their properties marketable again.

Speaking in an institution where members are chartered for the protection of the public, and where one of the cardinal principles in the education of probationers is efficiency in work, I say without fear of contradiction that arbitrary disputes on dilapidations are almost invariably caused by unqualified persons, whether it be the parties themselves, uneducated agents, builders, or other indifferent advisers.

The remedy which the Land Enquiry Committee say "it is not easy to suggest" lies ready at their hands. The phrase "able practical surveyor" is the sheet anchor of one Act of Parliament, and he appears in various forms in others. I suggest that no specification of dilapidations should be valid in any court of law unless prepared by an "able practical surveyor," who is also a member of one of the institutions where knowledge of the principles and practice of dilapidations is an indispensable qualification of membership.

This would dispose of much of the difficulty of the Land Enquiry Committee on Dilapidations except their last recommendation, which reads as follows:—

"In our opinion the law as to keeping the buildings in repair is in a very unsatisfactory condition. It is complicated and technical and, being contained in many hundreds of decided cases, is difficult to discover and understand. It should be codified, and the consolidating measure should be followed immediately by an amending Bill dealing with many hardships and difficulties now complained of, which the space at our disposal does not allow us to particularise."

From my earlier remarks it will be abundantly clear that I have not referred to the Land Enquiry Committee's Report for the purpose of proving that no need exists for legislation on the subject of dilapidations. But I seriously contend that no legislative proposals should be made upon this subject without some of that intimate knowledge and personal experience which the Committee give no evidence of having possessed.

Politicians are at heart well-meaning and much-abused individuals. They are only human, and they find difficulty in mastering what they call a "complicated and technical" subject. When they pass laws which we cannot fail to condemn, the blame should be on ourselves unless we offer them that enlightenment which it is in our power to give.

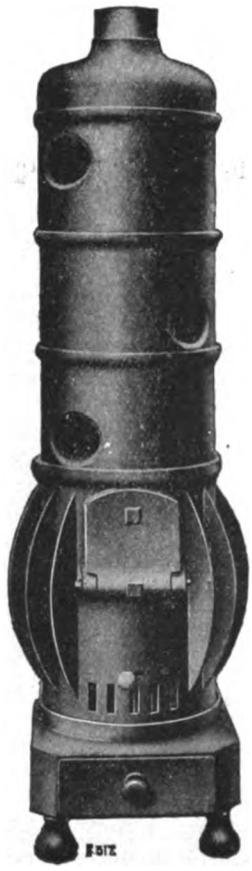
In compiling these notes I have endeavoured to lay stress on some of what I will call the blemishes of dilapidation law and practice. Possible remedies I have only hinted at here and there, because it is not for any single member of this assembly to lay down emphatically so extensive a proposition, but where those remedies are likely to be the subject of legislation, I trust we of the Surveyors' Institution will act up to our clear duty and suggest the lines rather than wait to criticise the measure.

Nearly thirty years ago no less an authority than Mr. G. M. Freeman, K.C., an eminent Associate of this body, suggested that a code should be prepared by a committee of lawyers and surveyors to this same end.

With the example of the Finance (1909-10) Act, 1910, before us, I am wondering whether to meet the legislative unrest I have mentioned something like a model Bill might not be prepared by one or more of our own legal Associates and discussed here.

This would be carrying a little farther such work as the Council places from time to time on the Provincial Committees of the Institution.

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ART IN LONDON.

THE ROYAL SOCIETY OF PAINTER-ETCHERS AND ENGRAVERS.

THE thirty-fourth annual exhibition of this Society is free from the indictment which we have had to level against the majority of contemporary exhibitions; we refer to the malign influence exerted by war conditions on the quality of the work. Nor is there cause to complain of the quantity, despite the fact that nearly one-half the number of members are not represented on the walls at 5A Pall Mall East.

One very interesting series consists of the whole of the etched work of Samuel Palmer, and small as it is in quantity the merit is conspicuous; in some the effect has the delicacy of wood-engraving. Who are the other artists whose contributions call for special favourable notice? There are Mr. A. J. Turrell in his two contributions, and Mr. Herbert Dicksee with three times the number and showing notable virility and character. Mr. Axel Haig is (as always) impressive; Sir Frank Short, R.A., the President, has but one contribution, "The Night Picket-boat at Hammersmith," but this mezzotint, with its impress of breadth, mystery, rhythm, and vigour of touch, is admirable. Again, Mr. F. S. Walker's one contribution, "The Towers of Westminster," is a really fine piece of execution in every way. Mr. Albany Howarth's two contributions, "The Five Sisters of York" and "North Transept, Westminster," are as good as anything he has hitherto produced. Mr. W. L. Wyllie, R.A., has a very delicate and descriptive style. The above are the best, and henceforth we will consider works more at random. Mr. F. L. Griggs exhibits a lack of atmosphere and a certain precision and hardness, which contrast unfavourably with such work as Mr. Turrell's. Mr. Nelson Dawson, who can be effective in some branches of art, may not boast of his exhibits here; "In Northfleet Hope" is peculiarly confused and its technique may be described as dirty; his other contributions are undistinguished, and this term may also be applied to Miss Amelia Bowerley's "Statue of Rameses the Great": we know and appreciate what she can do in other directions. Mr. Alfred Hartley, too, is not to be congratulated.

An artist should know better than to force forward details which should hold a secondary place of importance in a picture; but regard Miss Airy's "Newsvendor" with the obtrusive posters. Mr. W. P. Robins is commendable in the "Interior of a Barn" and "Driver's End," and "The City" by Mr. C. H. Baskett shows a nice broad style. Miss Adeline Illingworth has some good contributions. In general, there is a correct feeling for direction of line and, as we think, for values also. The exhibition is undoubtedly one to be visited with satisfaction.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BEDFORDSHIRE.

Bedford.—The Queen's Engineering Works: extensions, for Messrs. W. H. Allen, Son & Co.

Four houses, Cavendish Road, for Mr. F. Thomas.

Luton.—Garage, Kingsway, for Mr. B. Laporte.

Offices, York Street: alterations, for the Thermo Electric Company.

Premises, Manchester Street: alterations, for Mr. H. White.

Shop, &c., Biscot Road, for the Commercial Cars, Ltd.

Warehouse, Bury Park Road, for Mr. W. J. Bolton.

BERKSHIRE.

Reading.—The "Boatbuilders' Arms" p.h., Watlington Street: alterations. Mr. C. S. Smith, architect, 164 Friar Street.

BUCKINGHAMSHIRE.

Wendover.—Proposed Post Office.

CHESHIRE.

Neston.—House and farm buildings, the Five Lane Ends, for Mr. H. C. Peers.

Romiley.—The Conservative Club: enlargement.

CORNWALL.

Penzance.—St. John's Hall: alterations.

China clay store, the Quay (£1,200), for Messrs. Pochin & Co.

DEVON.

Plymouth.—Blackadon Asylum: extensions. Messrs. Thornely (F.R.I.B.A.), Rooke & Barron, architects, 11 The Crescent.

ESSEX.

Dagenham.—Premises: extensions, for the Sterling Telephone and Electric Company, Ltd.

HAMPSHIRE.

Basingstoke.—Premises, Winchester Street: alterations, for Messrs. Freeman, Hardy & Willis.

Shop, London Street: alterations, for Mr. T. Burbery.

Works: extensions, for Messrs. Thornycroft.

Southampton.—Church. Messrs. Mitchell, Son & Gutteridge, A.R.I.B.A., architects, 9 Portland Street.

LANCASHIRE.

Atherton.—The "Red Lion" Hotel, Church Street: additions and alterations, for Messrs. J. Sharman & Sons, Ltd. (of Bolton).

Bacup.—Proposed electric sub-station, Henrietta Street, for the Council.

Castleton.—The "Junction" Hotel: alterations (£500).

Fleetwood.—The Strawberry Gardens Hotel: alterations, for Messrs. Catterall & Swarbrick; also

Lytham.—The Railway Hotel: alterations.

LINCOLNSHIRE.

Lincoln.—Seven houses, Mount Street, for Mr. J. Plummer.

Laundry, Webb Street: extension, for Messrs. Jackson & Co.

Offices, Stamp End Works, for Messrs. Clayton & Shuttleworth, Ltd.

Stores, Canwick Road: extension, for Messrs. Robey & Co.; also

Workshop, Coultham Street.

Proposed Works, for Messrs. Howitt & Son.

Proposed Works, for the Lincoln and Lincolnshire Hide and Skin Company, Ltd.

Workshop, Newland Street West, for Messrs. Singleton, Flint & Co.

MIDDLESEX.

Tottenham.—Fever hospital, White Hart Lane.

MONMOUTHSHIRE.

Newport.—Proposed Labour Hall, for District Labour Party.

Hospital: extension. Mr. H. J. Griggs, A.R.I.B.A., architect, Metropolitan Bank Chambers, Commercial Street.

NORTHAMPTONSHIRE.

Peterborough.—Elastic factory, Princes Street: additions and alterations.

STAFFORDSHIRE.

Chase Terrace.—Two houses, Water Street, for Mr. J. E. Craddock.

Hanley.—"Victoria" Bakery: extensions. Mr. W. Campbell, architect, 2 Bagnall Street. Mr. S. Salt, contractor, High Street, Leek (£1,465).

Streetly.—Longfield Auxiliary Hospital: alteration.

Walsall.—Bakery. Messrs. Jeffries & Shipley, architects, 24 Bridge Street.

SUFFOLK.

Leiston-cum-Sizewell.—Cemetery chapel.

Isolation hospital: alterations.

SURREY.

Guildford.—Hall, Onslow Street. Mr. F. J. Hodgson, architect, 119 High Street.

Shottermill.—Proposed schools.

SUSSEX.

Brighton.—Shops. Messrs. North (F.R.I.B.A.) & Robin, architects, 99 Regent Street, London.

WARWICKSHIRE.

Birmingham.—Factory, Landore Street. Messrs. Buckland, Haywood & Farmer, FF.R.I.B.A., architects, Norwich Union Chambers, Congreve Street.

Leamington.—The Warneford and South Warwickshire Hospital: nurses' wing (£900).

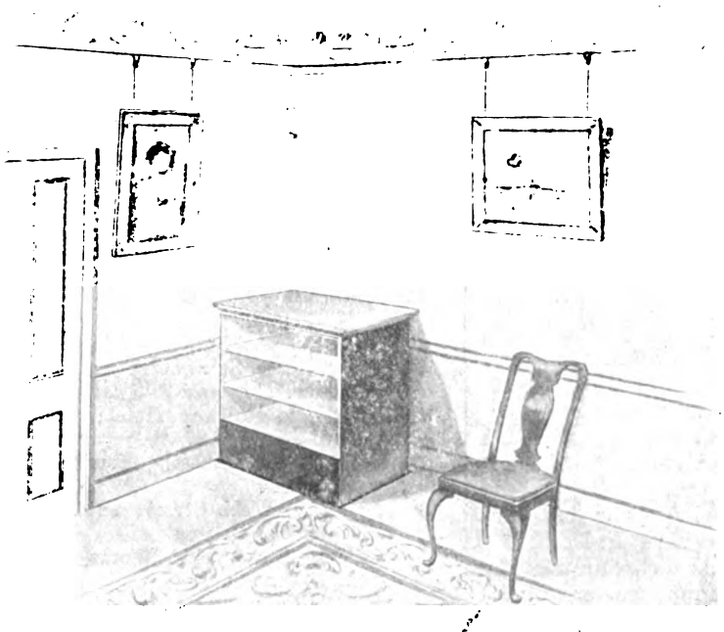
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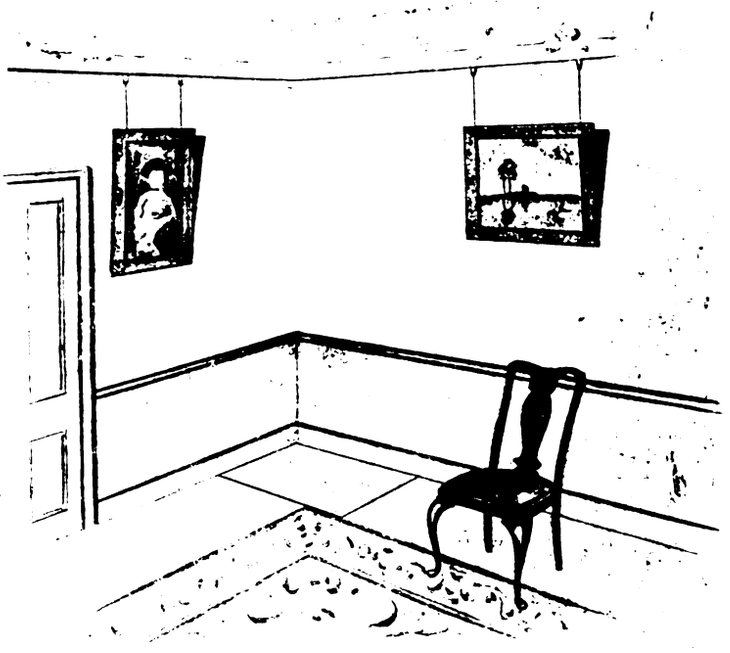
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ENGLAND—*continued.*

WILTSHIRE.

Amesbury.—Bank premises. Mr. E. B. Sharp, architect. Messrs. Mussellwhite & Son, contractors (£1,345).

Hotel, for Usher's Wiltshire Breweries.

Swindon.—No. 80 Regent Street. Messrs. Bridgman & Bridgman, architects.

YORKSHIRE.

Linthwaite.—Bakery, &c., Cowlersley Lane, for Mr. H. Kilburn.

Mirfield.—Warehouse, Ledgard Bridge Mills, for Messrs. Lyles & Sons, Ltd.

Normanton Common.—Premises: alterations, for Castleford Co-operative Industrial Society, Ltd. Messrs. Garside & Pennington, architects, Central Chambers, Wesley Street, Castleford.

Tinsley.—Business premises, for the Brightside and Carbrook Co-operative Society.

WALES.

Aberystwyth.—No. 15 Terrace Road: alterations, for Mr. D. Watkins.

Porthcawl.—Hydropathic hotel, Lock's Common (£50,000). Mr. S. Williams, architect, Borough Chambers, Wharton Street, Cardiff.

SCOTLAND.

Aberdeen.—Nos. 269-271 Union Street: alterations. Messrs. Kelly & Nicol, architects, 367 Union Street.

House, No. 2 Skene Square. Mr. W. E. Gauld, F.R.I.B.A., architect, 11A Dee Street.

Picture house, Wales Street. Messrs. Sutherland & George, R.I.B.A., architects, 26 Crown Street.

Ayr.—Villa, Ewenfield Road, for Mr. J. McNee (of Glasgow), £5,000.

Dalkeith.—Foresters' Hall picture house: alterations. Mr. A. M. Hardie, architect, Eskbank.

Dundee.—Cottages, Navarre Street, Barnhill, for Messrs. J. Tullis & Sons.

Edinburgh.—Nos. 3 to 11 Abbey Strand: alterations, for Mr. George Dalziel.

Falkirk.—Springfield Sawmills: additions. Mr. J. G. Callander, architect, 1 Newmarket Street.

Paisley.—Works. Mr. J. G. Bennett, architect, 12 High Street.

Port Glasgow.—Shipbuilding Works, Shore and Water Streets: alterations, for Messrs. Russell & Co.

IRELAND.

Drumquin.—Upper Langfield Church: alterations and improvements. Messrs. R. E. Buchanan & Co., architects, Castle Street, Londonderry.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 7,941. May 28, 1915.—Improvements in the construction of floors. E. P. Wells, 94 Larkhall Rise, Clapham, S.W.—This invention relates to improvements in the construction of tile floors, and to that class of such floors which is built up of hollow bricks or blocks placed side by side, with a T-shaped space between the adjacent blocks, which space is filled with concrete or cement, at the lower part of which is embedded a reinforcing rod. With such floors as hitherto made it is often necessary to provide a layer of concrete over the upper surface of the floor for taking up the compression stresses. A construction of tile floor has, however, been proposed, consisting of a number of hollow blocks arranged with a space between them to be filled with concrete, the said blocks having projections on their upper surfaces which are flush with the upper face of the concrete, and to which floor-boards can be nailed. In this invention hollow bricks or blocks are formed, with undercut grooves along the upper edges of the two opposite sides, the bottom edges of which are furnished with projecting flanges in a known manner. With this construction, when two such blocks are placed side by side with the said adjacent flanges in contact, a T-shaped space is left between the said two blocks, and this space is filled with concrete, which is keyed in the said grooves, and in which a reinforcing rod is embedded at the lower part in the known manner, the upper surfaces of the blocks serving to receive the nails for securing the floor-boards. Fig. 1 is a vertical section of a portion of a tile floor. Fig. 2 is a perspective view of one of the hollow bricks or blocks. Fig. 3 is a sectional view illustrating a modification. *a* is the body of the hollow brick or block, and *b* are the undercut grooves

Fig.1.

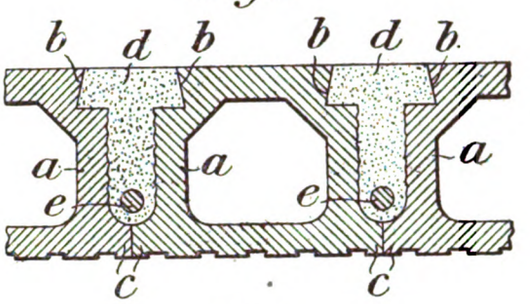


Fig.2.

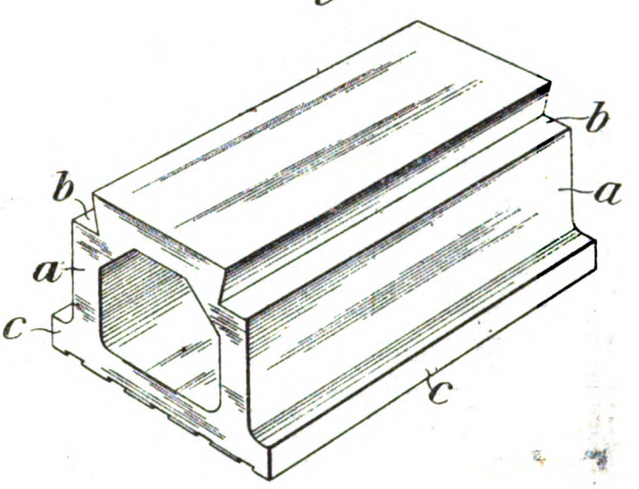
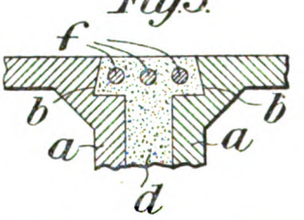


Fig.3.



which are formed at the upper edges of the two opposite sides, *c* being the flanges or feet which are provided at the lower edges of the said sides. From fig. 1 it will be seen that when the blocks are thus placed in position, T-shaped spaces are left between the adjacent blocks, and these spaces are filled up with concrete *d*, the said concrete, when set, forming a continuous T-shaped beam or girder, the web of which lies between the sides of the blocks, and the flanges of which occupy the space comprised between the two adjacent undercut grooves *b*. *e* represents reinforcing rods, which are embedded at the bottom of the webs of the T-shaped concrete beams.—December 29, 1915.

SIR W. GOSCOMBE JOHN, R.A., has accepted the Cardiff invitation to submit designs for a statue of the late Lord Ninian Crichton-Stuart. It will, however, be some time before the designs are ready for submission.

A WHITE Paper containing the appropriation accounts for the year ended March 31 last states that for the protection of Buckingham Palace against hostile aircraft £1,987 1*s.* 6*d.* was expended early in the war. The sum of £3,000 was allocated for the similar protection of the Parthenon frieze and metopes and Assyrian bas-relief at the British Museum.

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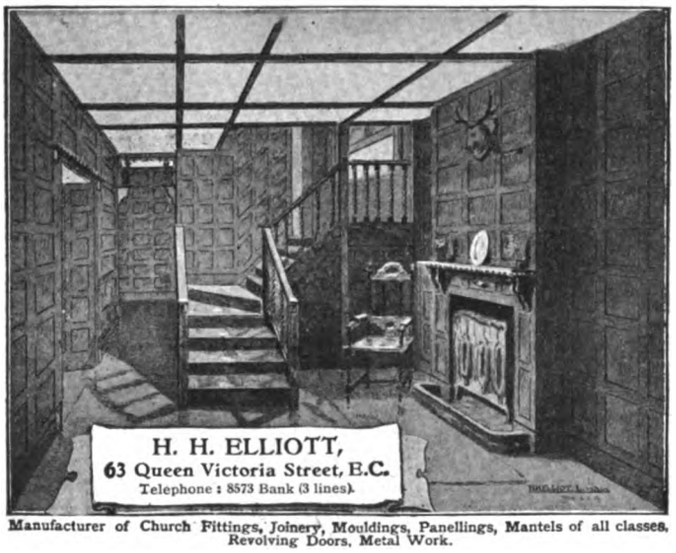
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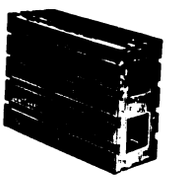
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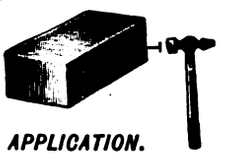
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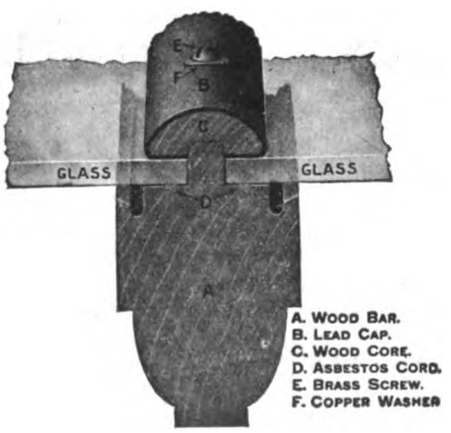
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THE ARCHITECT

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FORTHCOMING EVENTS

Monday, February 28.

Royal Institute of British Architects : Special and Business Meetings at 4 P.M.

Victoria and Albert Museum : University Extension Lecture XIX. on "English Renaissance Architecture (1500-1900)—The Architectural Character of the Later Renaissance, Inigo Jones and His Works," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Wednesday, March 1.

Royal Archæological Institute : Paper, entitled "A Saxon Church at East Bridgford, with Some Notes on Pre-Norman Remains in Nottinghamshire," by the Rev. A. Du Bulay Hill, M.A., at Burlington House, W., at 4.30 P.M.

Carpenters' Hall : Lecture, entitled "The Work of Alfred Stevens," by Mr. D. S. MacColl, LL.D., at 7.45 P.M.

Institute of Sanitary Engineers : Paper, entitled "Sanitary Work at the Front with the Expeditionary Force," by Lieut. B. R. Hebblethwaite, A.R.I.B.A., 2nd London Sanitary Co.

Thursday, March 2.

British Museum : University Extension Lecture XX. on "Roman Architecture (B.C. 100-A.D. 300), The Palaces of the Emperors, The Houses of the Romans, Pompeian Art," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Architectural Association of Ireland : Paper by Mr. R. M. Butler, F.R.I.B.A., at 8 P.M.

Friday, March 3.

Birmingham Architectural Association : Paper to be read.

HOME PROBLEMS AFTER THE WAR

IT is unnecessary for us to repeat what we have already pointed out to our readers—the present and accumulating shortage of housing accommodation throughout the country, more especially that for the weekly wage-earner or cottage resident. On the other side of the picture is the necessity for providing employment, after the war, for the many thousands who have gone from the building trade to the Colours and other war work for the nation.

These constitute two of the gravest problems that justify the action of the National Housing and Town Planning Council in arranging for a National Congress, which will be held at Caxton Hall, Westminster, from Tuesday, April 11, to Friday, April 14, next. In their preliminary programme the Council quote the words of many prominent men, both in Parliament and out of it, on the problem of employment for the demobilised millions of our present armies. Thus from the Prime Minister we have the statement expressed that "the Government is fully alive to the great importance of the economic, social, commercial, and financial problems that will arise after the war. I am strongly of opinion that not even our pre-occupation in the endeavour to ensure victory ought to prevent us from taking measures to secure that the problem shall be carefully explored by expert investigation."

In plain English this means that the Government, like everyone else who gives the matter a moment's thought, cannot fail to realise that the "home problems after the war" are of great importance, but the Government have their hands full, and pass on the problems to others for "expert investigation." The challenge thus thrown out has been taken up by the National Housing and Town Planning Council, and the forthcoming National Congress is the wisely devised first step.

We may epitomise the various matters which the Council propose for consideration under five heads: (1) Housing schemes for the building of urban and rural cottages; (2) Clearance of insanitary areas; (3) Intensive agriculture in homesteads with small holdings; (4) Town-planning schemes; (5) Economical building.

In all organisation that leads to success there are two necessary phases: (*a*) The determination of the object to be achieved; (*b*) the provision of the means to attain that object, and we may shortly consider the subjects proposed for discussion at the Conference from each of these aspects.

The consideration of housing schemes for the building of urban and rural cottages demands, first of all, the gathering of statistics from all parts of the country of the accommodation needed for each locality. It would be unwise for the Council to allow their energies to be directed towards the consideration of those schemes only which might have their claims forcibly formulated at a congress. The initial work in connection with these housing schemes should be allotted to a committee with an active secretary, and they should draw up the questions to be addressed to local authorities and consider the answers received. Then the Council would be able to determine where existed the greatest urgency for housing schemes and which of these it would be feasible to undertake.

So, too, with the clearance of insanitary areas. Information is required to enable the Council to advise the Government in lending their support to local authorities. Homesteads with small holdings connote quite a distinct set of considerations. Here information must be sought not only as to land available, but as concerns its capabilities in respect of cultivation and its suitability as regards disposal of produce. Facilities for marketing and for transporting to markets are all important questions for small holdings. It is no use preparing schemes for enabling demobilised soldiers to settle down and grow early salads under cloches if they cannot sell the salads profitably when grown.

The Council's inclusion in their programme of the consideration of town-planning schemes as subject matter for the Congress can scarcely be taken as a serious proposition in view of the fact that only one sitting of two and a half hours is allotted to it. The time would scarcely suffice to point out the present chaotic condition of town planning in this country, the lack of co-ordination, the need above all for some comprehensive national scheme of arterial roads as part of a national system of transport, in which not only roads but railways and waterways should play their part. On the Continent of Europe, strategic considerations have influenced Government action in the systematisation of transport. In our country strategic movements have been neglected, and our means of transport have, like Topsy, growed. Town-planning schemes are essentially local affairs, and we doubt if any National Congress can usefully discuss them.

Economical building, or, as the Council's preliminary programme puts it, "The possibility of adopting new and cheap building materials and securing economies in the design of cottages, provided that the essential standards of good building construction and of the wholesome environment of dwellings are not impaired," is a matter that as far as a congress is concerned must resolve itself chiefly into an advocacy of the removal of present-day legislative restrictions, parliamentary and official, upon cheap build-

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ing, and of opposition to such removals. It is therefore a legitimate subject for debate. It is open to either side to show the truth or falsity of the proposition that our present restrictions prevent the erection of cottages at an economic rent.

Having obtained the necessary information as to the extent to which provision should be made for the various matters that the Council puts forward for the consideration of the Congress, there then comes into purview the means by which that provision is to be effected. Needless to say, finance plays an important part. With regard to housing schemes the Conference is to be asked to discuss "The provision by the Government at the close of the war of the necessary capital to enable such schemes to be carried into effect." Under the head of insanitary areas "The need for financial aid and encouragement being given by the Government to local authorities" is set down for discussion, whilst the provision of homesteads with small holdings embraces the consideration of "The reorganisation and extension of the methods by which capital can be provided to aid all classes of cultivators of the land, so that the rural resources of the kingdom can be adequately developed."

In all the various activities suggested by the Council, it will, we think, be admitted that wisely considered schemes will be for the benefit of the nation rather than of the individual. It is an advantage to us all that the demobilised soldier should be usefully employed, it is to the benefit of the whole community that the least skilled labourer should be properly housed, as well as fed and clothed, so that he may put forth the best amount of work that lies within the compass of his ability.

After the war we shall be, comparatively, a poorer nation. To regain our former position the useful output of the whole of our workers must be increased to its maximum for the sake of the nation. Hence the financial support of the national credit may rightly be given to any schemes or activities that will, by improving the condition of the worker, enable him to increase the national wealth by a fuller use of his powers.

NOTES AND COMMENTS.

We regret to have to record the death of Mr. Henry Louis Florence, past vice-president of the R.I.B.A., who, on the 17th inst., died at Bath after a short illness, in his seventy-fifth year. The eldest son of the late Mr. John Henry Florence, of Streatham, he was educated privately, and after studying for his profession in England continued his studies in Paris. He was Soane medallist of the Royal Institute of British Architects in 1869, and travelling student and gold medallist of the Royal Academy in 1870. For some years Mr. Florence took a prominent part in the work of the Architectural Association, of which he was a past president, and he continued his participation in the annual excursions till quite recently, so that he obtained the respect and affection of a large number of the younger generation of to-day's practising architects, who could not help appreciating his invariable urbanity and helpfulness to all with whom he came in contact. Mr. Florence commenced practice in 1871, and among his professional works may be mentioned: The Queen Victoria Memorial, Kensington; the Carlton Hotel, the Hotel Victoria, the Coburg Hotel, the Empire Hotel, Lowestoft; the Holborn Viaduct Hotel and Station, the Holborn Town Hall, the new library, pension room, and class rooms of Gray's Inn, and the restoration of Gray's Inn Hall, the Institute of Journalists, the new station at St. James's Park for the Metropolitan District Railway, the new library, museum, and exit staircase at Freemasons' Hall; and the alterations and additions to the United Services Club. Mr. Florence, who was a Fellow of the Geological Society, for twenty-one years held a commission in the Volunteer force, from which he retired in 1892 with the rank of lieutenant-colonel, receiving the Volunteer decoration.

Discussions are on foot in France on the principles that should govern the treatment of those grand monuments of religious or civil architecture that have been destroyed or seriously damaged by the Germans in their criminal and insane rage. Some would have them maintained as they are left by the enemy, receiving just so much care and attention as will preserve them in their ruined condition for future ages to see them as they are. Others would leave them even without attention till time completed the destruction that the Boches have commenced. Others again take an exactly opposite view and advocate the literal and complete restoration or rebuilding of those monuments partly or wholly destroyed to their condition immediately before the war. M. André Michel, keeper of the mediæval, renaissance, and modern sculptures at the Louvre, takes what we also agree is the wiser view. Putting out of court the idea of maintaining ruins as objects of beauty as unworthy of the example set by all live nations, as the Greeks of the time of Cimon and Pericles, who rebuilt the monuments on the Acropolis destroyed by the Persians, and the French who, after their previous sufferings from invasion and domestic upheavals, reinstated with new comeliness and modernity their churches, town halls, and châteaux, M. Michel lays down the principle that each individual monument requires to be treated in a manner appropriate to itself; some to be repaired, some to be restored to their former shape, some to be rebuilt according to the taste or fashion of to-day. Thus, of the cathedral of Reims he says, "Les statues de la cathédrale de Reims resteront au portail avec leurs blessures, mais les voûtes seront réparées et mises par de nouvelles toitures à l'abri des intempéries des saisons."

Economy in education we have repeatedly reprobated as unwise, but a wave appears to be spreading over the country following the bad example of the Government. No doubt there has been extravagance in school management and provision, and the substitution of paper, ink, and lead pencils for the slate is but one example of superhygiene, which, however, does not seem to have made any difference in the prevalence of childhood's epidemics.

As an instance of extravagance in education may be quoted the lessons being given to children of elementary schools at the Manchester Museum in biology, geology, and Egyptology. True, these lessons are given to fill up time which would otherwise be spent in play or picture-theatres, as so many schools have been taken over for military hospitals that the Manchester Education Committee have found it necessary to resort to a half-time system, so that the dispossessed children may have some instruction. It is true that "in all knowledge there is profit," but the extent of the profit is somewhat hard to seek. Of course Dr. Tattersall, Keeper of the Museum, has different views on the instruction. He says in a letter to the "Manchester Guardian":—

"By these arrangements effective instruction in the Museum is provided for 900 to 1,000 children per week, drawn at present from the higher standards of the elementary schools. An important feature is the continuity of the instruction. Each class comes once a week until its course of six to nine lectures is completed. By this means one subject at a time is thoroughly dealt with, and the foundations of a more real and lasting knowledge are laid than would be at all likely to result from an attempt to cover more ground in a more superficial way. The work is at present only in the experimental stage, but decidedly encouraging results are already discernible. The keenness and enthusiasm of the children and the regularity of their attendance, even when they have to come long distances, witness to the interest they take in the lessons. On one occasion a class insisted on coming over two and a half miles in the rain rather than miss their weekly lesson! The essays which they write on the subjects taught bear testimony to the efficacy of the

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instruction and to the intelligence with which the children assimilate the knowledge presented to them.

"Another valuable result manifests itself in quite another direction. The children are bringing their parents and other adult relatives in increasing numbers to the Museum on Saturday and Sunday afternoons to see those specimens and objects about which they have learnt during the week. Many a life-long resident in Manchester has, by this means, been made aware for the first time of the existence of such an institution as the Manchester Museum!

"I should like to emphasise the fact," Dr. Tattersall adds, "that essentially similar work, owing its inception to the same causes and differing only in details according to the nature of the institution, is being carried on at the City Art Gallery, the Whitworth Institute, and kindred institutions in the city. If the policy advocated by the War Retrenchment Committee and adopted by the Government as far as it concerns national institutions be extended to Manchester, the work that I have outlined here must cease. The children have already been deprived of their schools through the exigencies of the war. Are they now, in the name of supposed economy, to be deprived of the valuable alternative instruction provided for them? I venture to think such a lamentable result could in no way be regarded as an economy."

Our colleagues in the United States realise that the architectural profession suffers there, as it does with us, from an imperfect comprehension of the architect's functions, and from a leading article in the "American Architect" we learn that the various Chapters of the American Institute of Architects include amongst their activities the education and enlightenment of their lay public in the services obtainable from duly qualified practitioners of architecture, both as an art and as a business. As an example of the propaganda our contemporary reproduces the following, clipped from the advertising section of the Syracuse, N.J., "Post Standard" of January 8, 1916:

INVESTMENT COUNSEL.

An owner's interest in new buildings or alterations extends beyond the immediate proceeds. The architect should be able to advise the investor as to the probable future value and future profits of the enterprise. Such advice should be based upon knowledge of the trend of population, industry, commerce, and transportation, as illustrated in the past and as indicated for the future by developments in municipal boundaries, public service, and private enterprises.

The architect should derive from such knowledge a conclusion as to the type of development whose profit will survive anticipated changes in environment and relative location, or whose conversion into other forms or use will be economical.

Such conclusions are part of the service to the client.

CENTRAL NEW YORK CHAPTER,
AMERICAN INSTITUTE OF ARCHITECTS.

In a lecture to the Birmingham Architectural Association, Mr. J. A. Swan, F.R.I.B.A., put before the members his views on the Flemish art of the Middle Ages as exemplified in architecture. Flemish art, he said, borrowed much from the German and French, but he held it undoubtedly indigenous. For its true character they must search the record of the great towns. In spite of the strong German and French influence there was a great unity of expression, whether in architecture, painting, sculpture, or the allied arts, Gothic or Renaissance. They were much imbued with the spirit of romanticism. It would not be too much to say that the countries closest in contact with the Netherlands were infected with this exuberant vitality. They took it to themselves, and our own country owed an immense debt to Flemish art in the Elizabethan and Jacobean periods. In architecture the best Flemish work was built for secular rather than ecclesiastical use. Bruges, Ghent, Antwerp, Malines, Brussels, Louvain, and Ypres provided a magnificent series of town halls, cloth halls, belfries, and guild houses. Ypres, which held much beautiful Flemish work, was now a tragedy in stone. But what magnificent work there had been there! The familiar Cloth Hall and Hotel de Ville owed much to the splendid square of 1,000 ft. by 350 ft. in which they were set, an example of civic planning worthy of emulation. It gave an impressiveness and grandeur to the building. Mr. Swan compared it to Victoria Square, the setting for the civic buildings. A hundred years ago Ypres might have been emulated in Birmingham by acquiring the whole of Christ Church, Colmore Row, and Waterloo Street up to St. Philip's Church.

At a meeting of the Society of Antiquaries of Scotland Mr. W. T. Oldrieve, F.S.A.Scot., read a communication on "The Ancient Roof of Glasgow Cathedral: Its Condition and Restoration." It was pointed out that only two of our Scottish mediæval cathedrals have survived to the present time with any part of their original roofs—these are St. Magnus Cathedral at Kirkwall and St. Mungo's at Glasgow. An examination of the roof by H.M. Office of Works in 1909 revealed that a large number of the rafters were badly decayed, that the repairs carried out in 1735 or 1824 had not appreciably strengthened the roof trusses, and that in several cases the lower ends of the rafters had entirely disappeared, having no bearing whatever upon the wall-head. Dealing first with the choir, Mr. Oldrieve went on to say that a minute inspection of details revealed the following facts. That there had been no tie-beams, as was at first thought probable, because the details of the old jointing at the foot of the rafters varied so much that this appeared impossible, and that originally there was internal boarding. The original rafters had been shaped so as to form a trefoil or cusped roof, a most unusual design for the trussed rafter type of roof in a church of large dimensions. Dealing with the nave, Mr. Oldrieve pointed out that there was no evidence of internal boarding of the roof of that part of the cathedral. The timbers were of the same framed trussed rafter type, but without the trefoil suggestion.

R.I.B.A. EXAMINATIONS, 1916.

THE Council give notice that the Intermediate and Final and Special Examinations will be held once only this year, viz.:—

The Intermediate from June 2 to June 9; the Final and Special from June 22 to June 30.

The Council hereby give notice that the Preliminary Examination for the registration of candidates as probationers will be discontinued.

Candidates will for the future be required to submit any of the following certificates, or such other certificates as may be satisfactory to the Council:—

The Matriculation Examination at any University in the British Empire.

The Senior or Junior (Honours) Local Examinations conducted under the authority of any University in the British Empire.

The School or leaving Certificate of the Oxford and Cambridge Schools Examination Board.

The Examinations held under the Central Welsh Board.

The Examinations for the first-class Certificate of the College of Preceptors.

The Senior or Junior School Examination or the Matriculation Examination of the University of London.

Senior School Certificate or a School Certificate of the Joint Matriculation Board of the Universities of Manchester, Liverpool, Leeds, and Sheffield.

The School Certificate of the University of Bristol.

The certificate must show that proficiency has been attained in the following subjects:—Composition, dictation, arithmetic, algebra and elements of plane geo-

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metry, geography and history, language (either Latin, Italian, French or Russian), elementary mechanics and physics.

Candidates who have obtained a success in any of the Board of Education Examinations in Art held in 1913 and subsequently will be exempted from subjects 6 and 7, viz. geometrical drawing and freehand drawing from the round.

The following certificates from the Board of Education, South Kensington, are accepted as exempting from the eighth subject, viz. elementary mechanics and physics:—

A first-class in the two Board of Education Examinations: Subject 6, theoretical mechanics. A. Div. 1: Solids. B. Div. 2: Fluids—Stage 1.

Candidates who do not possess the Board of Education certificates will be required to submit with their applications drawings showing their knowledge of either geometrical drawing or perspective, and freehand drawing.

All applications for registration as probationers must be accompanied by a fee of two guineas.

ILLUSTRATIONS.

DESIGNS BY MR. TEMPLE MOORE.

WE have the pleasure in this issue of reproducing the three drawings from Mr. Temple Moore's designs for Nairobi Cathedral, Pusey House, Oxford, and the church of St. Augustine, Gillingham, which were exhibited in last year's Royal Academy.

CHARING CROSS RAILWAY BRIDGE.

AT Tuesday's meeting of the London County Council Mr. J. D. Gilbert, M.P., asked (1) if the South-Eastern and Chatham Railway Company were promoting a Bill to alter and strengthen the existing railway bridge at Charing Cross, (2) whether the Council had received applications from the R.I.B.A. and the London Society asking the Council to endeavour to improve the appearance of the bridge, and (3) if the Council's petition contained any clause in reference thereto, and if not, why?

Mr. F. St. John Morrow replied (1) yes, (2) yes, the Societies in question objecting to the expenditure of a large sum of money on the bridge on the ground that it would prejudice the removal of the station to the south side of the river, and (3) the Committee considered the matter of inserting a clause in the petition for the improvement of the appearance of the bridge, but came to the conclusion that they could not reasonably ask for the expenditure of money on a liability not absolutely necessary, so the clause was not inserted.

A MEETING of the Society of Antiquaries was held last week at Burlington House, Piccadilly, W., when Mr. Harold Brakspear, F.S.A., read a paper on "The Dorter Range at Worcester Priory." The President, Sir Arthur Evans, referred to the closing of museums, and said that at a time when we were throwing away millions, to turn on educational institutions which were serving a useful purpose for convalescent soldiers, for the sake of saving a few minutes' expense of the war, was a course to be much condemned.

THE Bristol Society of Architects held their fifth sessional meeting last week at Messrs. Fortt's, 6 Royal Promenade, Clifton. After tea the chair was taken by the President, Mr. Graham C. Awdry, F.R.I.B.A. Miss Margaret I. Chilton, A.R.C.A. Lond., R.W.A., then read a paper upon "The Making of a Stained-glass Window." Miss Chilton, during the course of her lecture, showed various drawings, and also examples of stained glass and leadwork, together with many tools used by the craftsman. A number of lantern slides were also exhibited, illustrating stained-glass windows designed by well-known artists. A vote of thanks, proposed by Mr. J. H. Weston, F.R.I.B.A., and seconded by Mr. C. F. W. Dening, F.R.I.B.A., was carried with acclamation.

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—VIII.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

THE city of Como is 665 feet above sea-level, and has a population of about 34,500, is the capital of a province, and an episcopal see.

Como is a very old town, and it is difficult to trace back its history with sufficient accuracy to be able to state with any certainty its true origin.

Its Roman name was Comum, and for centuries it was ruled by a strange artistic race, known as the Etruscans. To-day it is a prosperous industrial town with large dye-works and silk factories.

During the many centuries Como has passed through many vicissitudes, and its long history has been altogether a remarkable and chequered one. Dominated at one period by one foreign Power, and at another period by some other foreign Power, the centuries have witnessed strange and curious happenings in this little out-of-the-way Italian town.

Como, like many other of the lake-side towns in this part of the world, is enclosed by mountains after amphitheatrical fashion. It lies at the south-west end of the Lake of Como, just where the little stream Cosia enters the lake.



A LAKE-SIDE VILLAGE.

Architecturally, Como is a place of much interest and note, containing some very fine architectural examples worthy of examination and study.

Amongst the Gothic cathedrals of Italy the cathedral of Como occupies a high position; so much so that one writer has described this edifice as perhaps the most perfect building in the whole of Italy, illustrating the fusion of the Gothic and Renaissance styles.

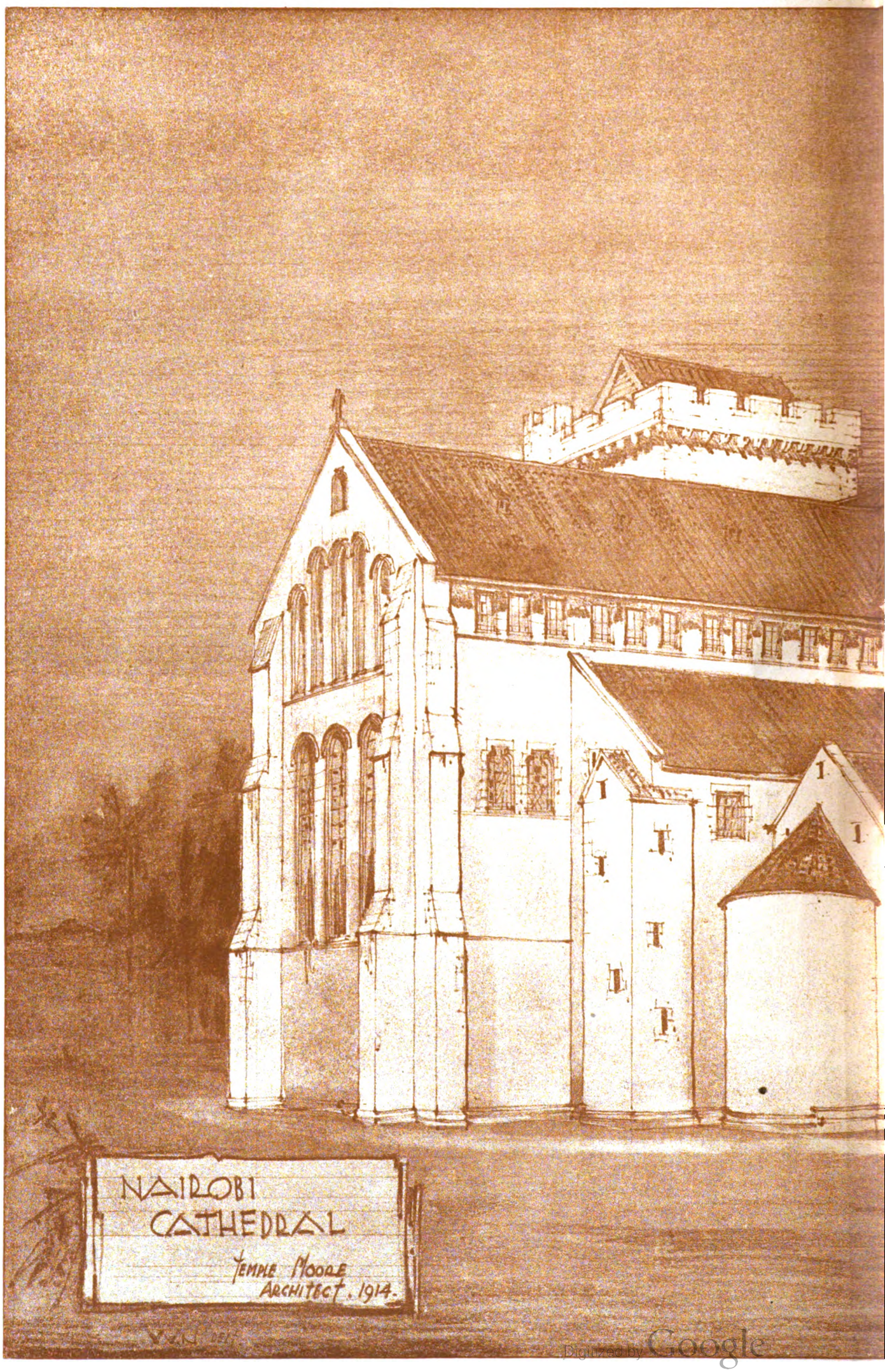
The large square near the harbour, where the townspeople and visitors congregate on fine evenings, is known as the Piazza Cavour, and is on such occasions full of life. From this square by the Via Plinio the Piazza del Duomo is reached, and in this latter square is situate the famous cathedral.

The original church of Santa Maria Maggiore, a Romanesque basilica, was built in the eleventh century,

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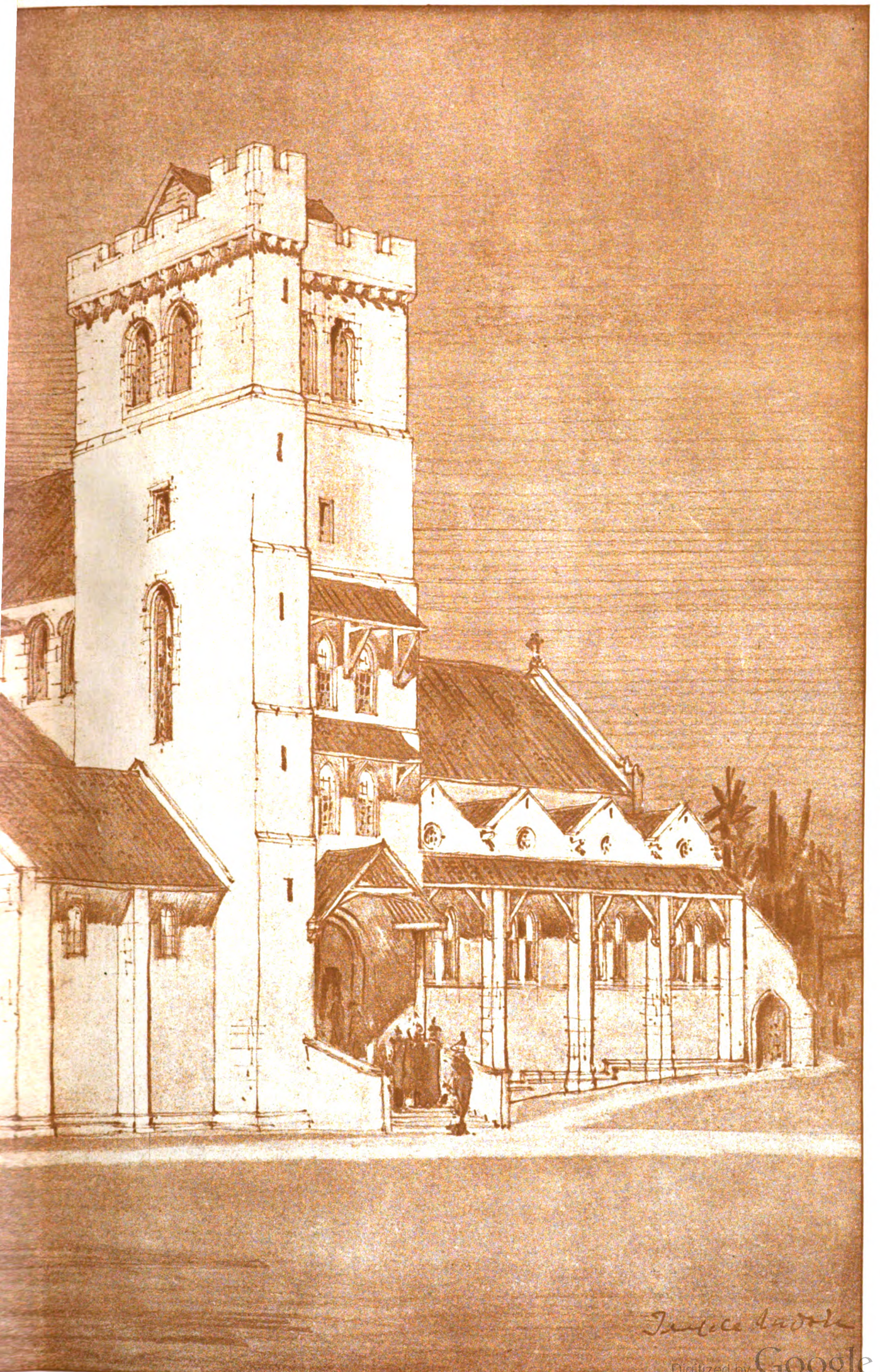
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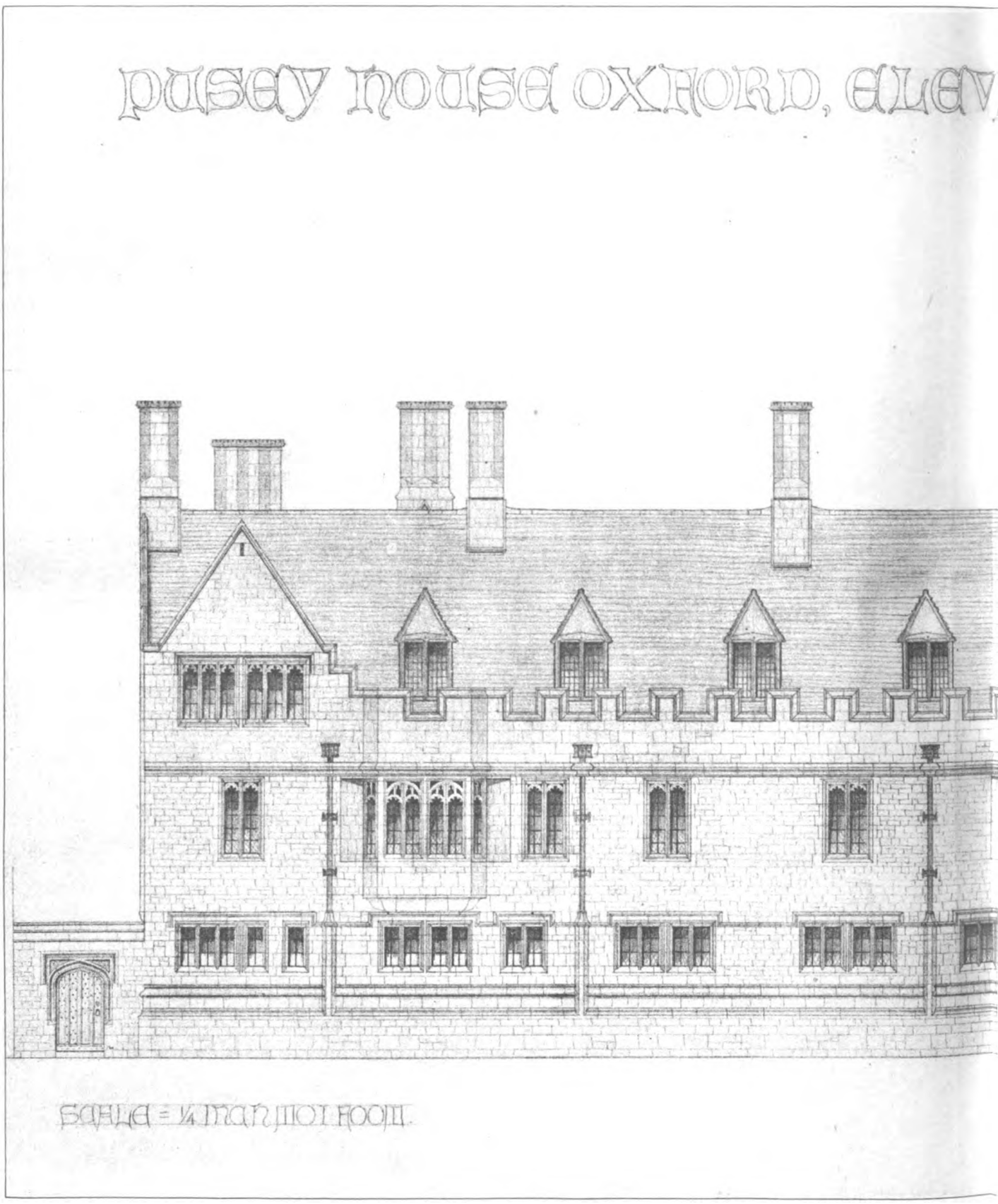
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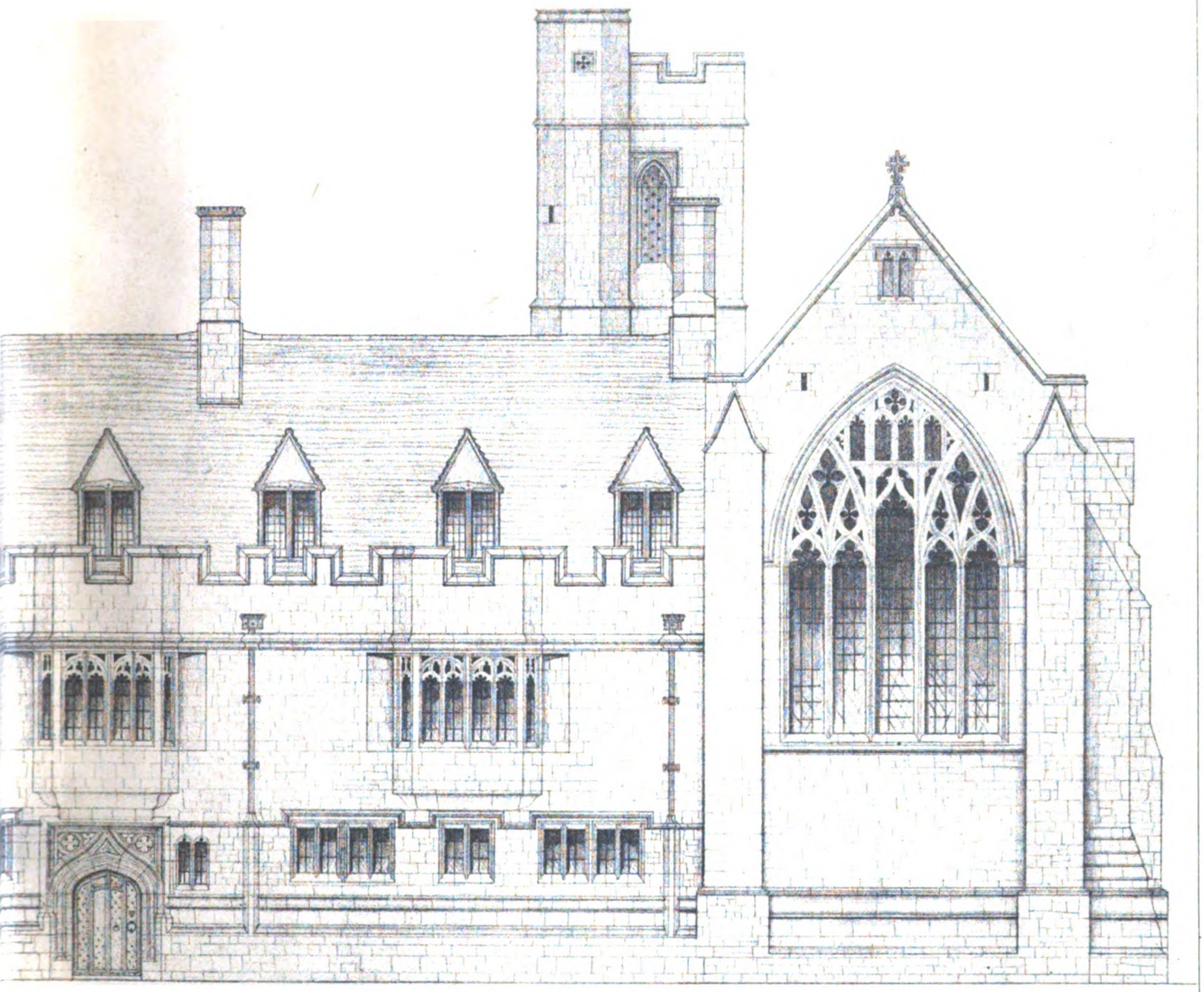


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ANNEXION TO SAINT GILES STREET.



TEMPLE MOORE, ARCHITECT.
44 BEDFORD ROW.
LONDON, W.C.

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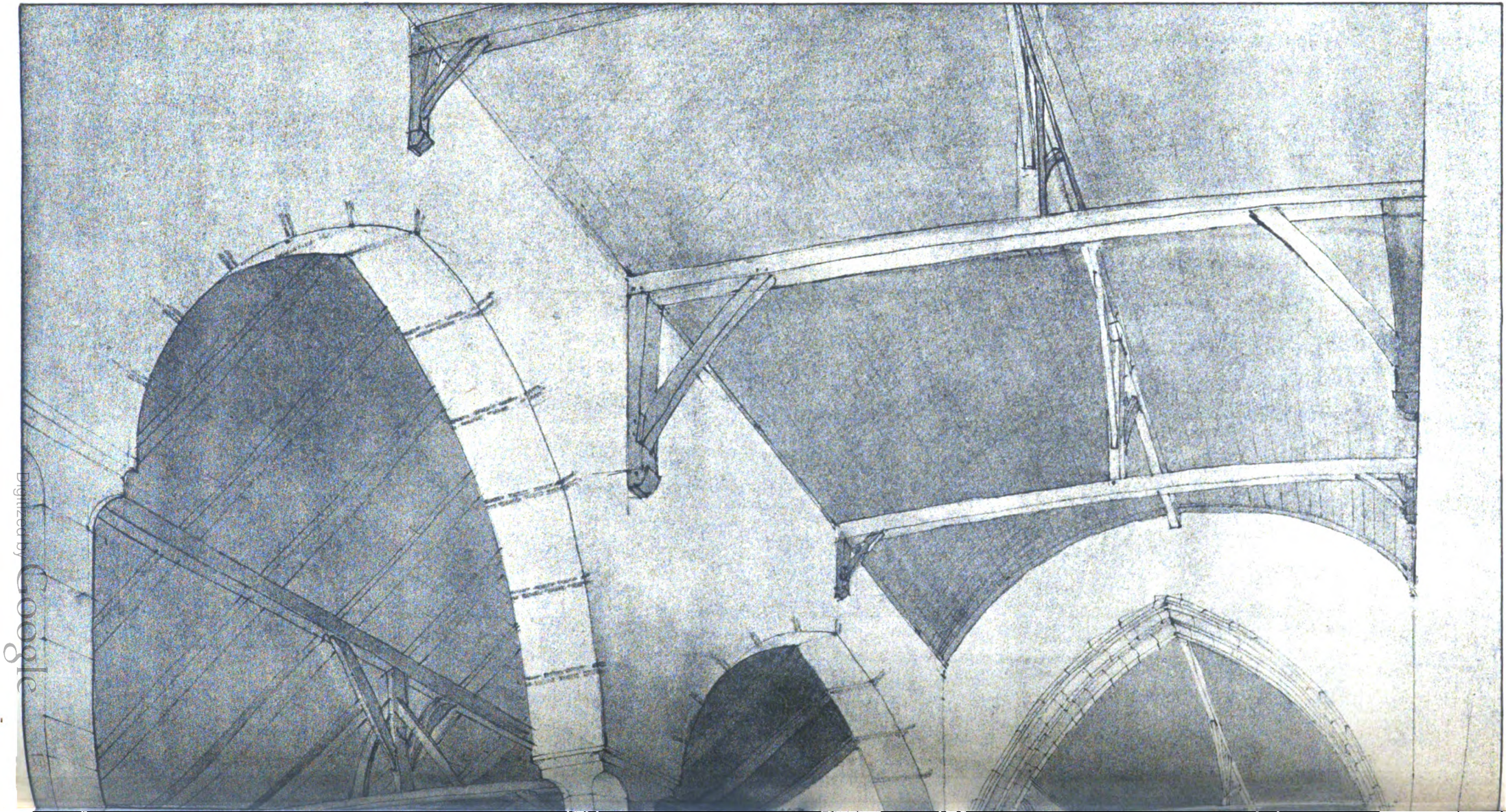
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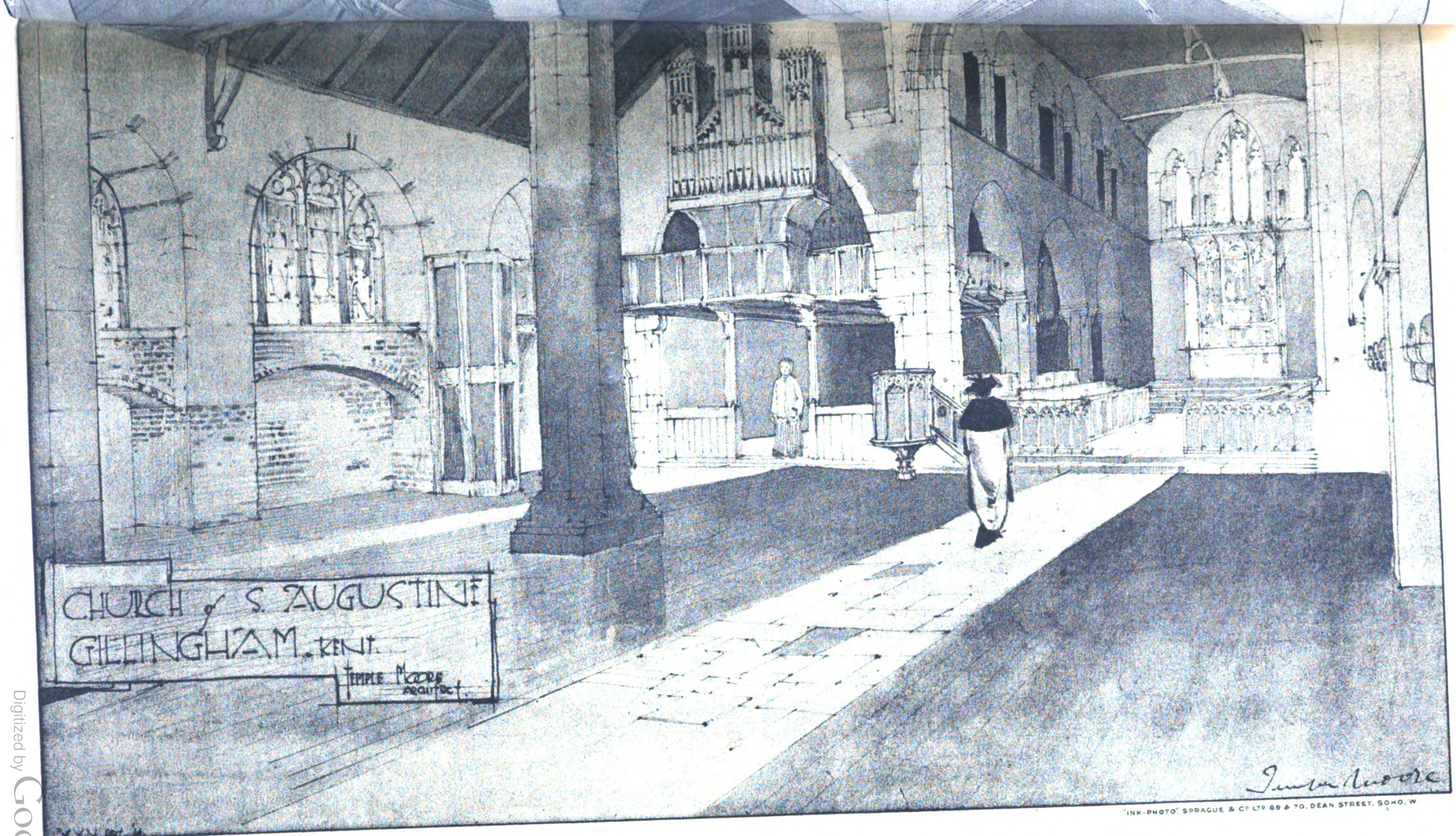
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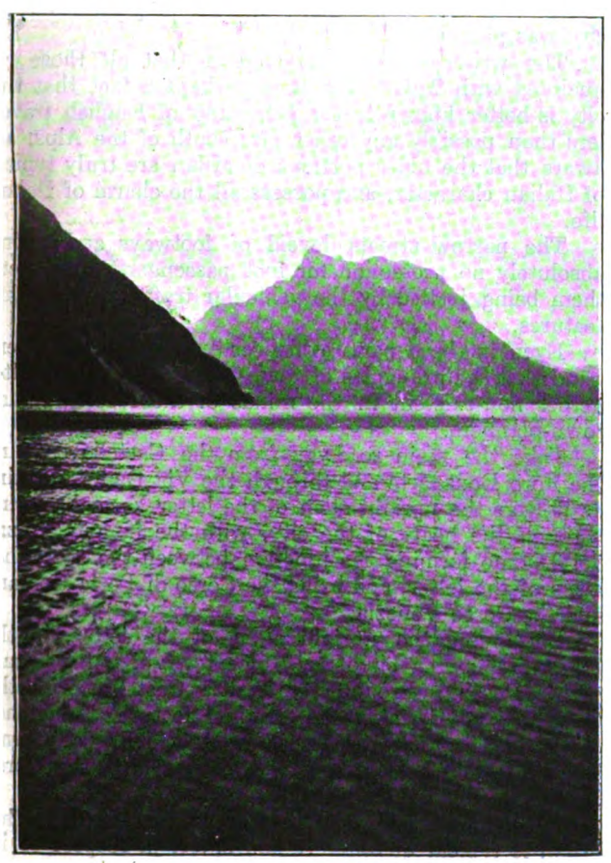
and was the cathedral of Como for this and the two succeeding centuries (the date of the erection of this church is given by some authorities as 1000).

Lorenzo degli Spazi designed the present church, and the nave was re-built in 1396-1453. (Spazi, it is recorded, was amongst the many architects who took part in the work of Milan cathedral.) This church is built entirely of marble from the quarries of Musso and Olcio.

The form of the cathedral of Como, as was the case of its predecessor, is that of a Latin cross, black marble from Olcio forming the body, and white marble from Musso forming the arms of the cross.

The Gothic façade, by Luchino Scarabota, of Milan, was erected in 1457-87. The ornate Early Renaissance ornamentation of the exterior of the nave and the façade was the work of the brothers Tommaso and Iscopo Rodari.

The choir was re-built in 1513, in the Renaissance style, by Rodari, it is recorded from Solari's design of the delightful apse.



AN ITALIAN LAKE SCENE.

The octagonal central dome by Iuvara has a more recent date—viz., the early or middle of the eighteenth century.

During nearly four centuries this church passed through periods of construction, and various architectural styles were adopted, presenting a pleasing and effective whole, when all the circumstances and conditions are taken into consideration. A very fine rose window exists over the great western entrance to the cathedral, and some very beautiful sculpture surrounds the doorways upon the northern and southern sides of the church.

Adjoining the Duomo stands the Broletto, an ancient building, originally the Town Hall of Como. It is built in courses of black, white, and red marbles, and is a particularly picturesque structure, supported upon pointed arches springing from octagonal piers. This edifice was built in 1215, and restored in 1900. The Torre Campanaria adjoining was also erected in 1215. Architecturally, and from point of view of antiquity, perhaps the most interesting church in Como is the double-aisled eleventh-century Romanesque basilica of Sant' Abbondio.

The early Christian fifth-century church stood upon the same site, and the foundations were used for the erection of the existing Sant' Abbondio. The structure was considerably altered in 1587 and extensively restored in 1863-88.

Como must now be left, reluctantly it must be admitted, and the journey continued, for time is passing all too rapidly.

The train is taken from the Stazione San Giovanni, and the terminal moraine of that arm of the Lake of Como on which the town stands is traversed. A number of interesting places are passed through, Camerlata, with its ruined Castello Baradello, and several other points of inconsiderable note, until Seregno is reached. This is a fairly large town of some 12,000 inhabitants, and is the terminus of a railway to Bergamo, which passes through sundry areas of considerable interest, over the Adda by the Ponte di Paderno, a fine iron structure 275 feet above the river, close to the electricity works providing the current for the city of Milan. Then Desio is passed, and finally, before reaching Milan, Monza, about twenty-one miles from Como.

This place, with about 28,000 population, is on the Lambro, and is somewhat famous as the old coronation town of the Lombardy kings since the eleventh century. It possesses a Gothic church of Santa Maria in Strata, ascribed to the fourteenth century, the Palazzo Arengario (town hall), a Gothic structure of the thirteenth century, and the Duomo San Giovanni, a fourteenth century Lombard-Gothic edifice by Matteo da Campione, erected upon the site formerly occupied by a church founded in 590. This cathedral has a fine rose window and a campanile, which was destroyed by fire in 1740 and rebuilt in 1891.

The journey being continued, Milan is reached after a journey (if no stops are made on the way) of about 1¾ hours from Como. There is necessarily a considerable amount of suppressed excitement on the part of the traveller to walk the streets of this wonderful city, the most popular city in Italy, with such an exceedingly interesting and ancient history, and the capital of Lombardy.

Lombardy is the district south of the Alps separated by the Lago Maggiore and the Ticino from Piedmont, from Venetia by the Mincio, and from the Emilia by the Po.

Lombardy is divided into eight provinces, Como, Milano, Pavia, Sondrio, Bergamo, Cremona, Brescia, and Mantova.

The situation and the great wealth of Lombardy have rendered this district the centre of discord among European nations for centuries.

Milan, known to the Italians as Milano and to the Romans Mediolanum, has a population of about 600,000, and lies upon the river Olona.

It is the seat of an archbishop, and stands near the entrances to a number of important Alpine passes. It claims to be the " capitale morale " of Italy, and is largely the heart of the modern life and activity of Italy.

By the arrival at Milan the fact is very forcibly impressed upon one's mind of the exceeding great difficulty of crowding into one short visit to Italy a just appreciation of the great number of works of art to be met with in the progress of the tour.

It is naturally preferable that a number of tours should be undertaken for even the most superficial study of the architectural and artistic wealth of this wonderful country; but at the same time the influence upon the susceptible mind of even the most rapid of tours is astonishingly great and incredibly lasting. The marvellous depth of the Italian creative genius is so stupendous that no guide book, however copious, can accurately teach the full depths thereof.

Although Northern Italy is not so rich in ancient beauty and art as Rome and Southern Italy, yet Northern

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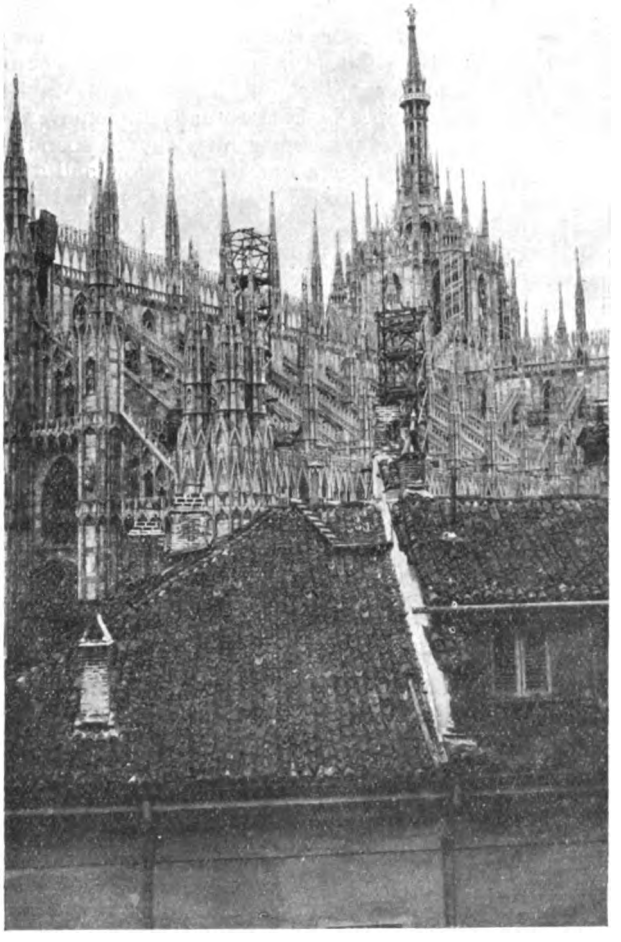
Italy possesses many fine relics of Roman architecture, and the student may find much in sculptures to admire within this area.

Northern Italy stands in the forefront in the artistic life of the middle ages and early Renaissance.

It is known that by tracing the progress of Italian art from the fourth century much of great interest may be abstracted from the period intervening between this century and the tenth, the term Basilican style being frequently employed in reference to the early architecture of the latter.

During the eleventh century the architectural tendency in Italy took a decided and promising turn, and the Romanesque style came into being, and there is scarcely a district in Italy not containing examples of Romanesque architecture.

At Verona (visited later in this tour) a famous examp'e of this style exists in the church of St. Zeno and the church of Sant' Ambrogio at Milan, with its characteristic façade and forecourt, and very many other examples in other towns and cities in all parts of Italy.



MILAN CATHEDRAL.—AN INTERESTING VIEW FROM A WINDOW IN THE HOTEL METROPOLE.

Gothic architecture in Italy when introduced was more or less in a perfected form. This style was introduced by foreign architects, and many in Italy quickly became admirers of and adopted it.

Italian Gothic is exemplified in the palaces of Venice and in many of the mediæval cathedrals in all parts of Italy. Renaissance architecture in its various stages has many interesting and beautiful examples in this country, and within a comparatively confined area occupied by certain groups of buildings in Venice the student has the opportunity of tracing the progress of Renaissance architecture through its various stages.

Milan, owing to the continuous battles which raged within its vicinity and the wholesale destruction consequent thereon, bears scarcely a trace of the city which, under the Romans in 222 B.C. and after, was one of the finest cities in the world.

The commercial struggles and the art history of Milan throughout the centuries are well worth the careful study of all lovers of Italian art and history.

It is impossible within the short space of a little holiday or within the narrow compass of a few fragmentary articles, to even touch upon a tithe of the items of great interest in this ancient centre of architecture and art. A mere rapid survey of some of the most prominent features and a rapid passage through its artistic thoroughfares are the most that can be attempted within the time provided by a few days' sojourn.

On arrival at the Stazione Centrale della Ferrovie, the central station of Milan, erected in 1864—a very fine structure as stations go—and used by all the State lines, one is able at once to detect, on emerging from this station, that a certain breadth of conception existed in connection with the lay-out, when this portion of the city was planned.

The writer ventures to suggest that all those acquainted with Milan, and it is perhaps a fact that this city is better known to the generality of English travellers than possibly any other city south of the Alps, are aware that the older portions of Milan are truly typical of Italian character, and possess all the charm of Italian life.

The narrow streets devoid of footways and having absolutely no protection for foot passengers, to prevent them being jostled by the vehicular traffic, are striking features.

Even in these parts evidences are provided on every hand that the principles of town-planning were not altogether non-existent in the minds of those early Italian town-planners.

Take the main roadway from the Castello crossing the Foro Bonaparte and through the Via Dante, forming as it were the upright stem of the letter Y, and passing through the heart of the city, with the famous Piazza del Duomo forming the junction between the two other arms of the letter, and being the Corso di Porta Romana and the Corso Venezia.

Continuing the upright stem of the letter, in the other direction, a bit of very nice town-planning is met with. Passing through the Piazza Castello, with the Castello itself forming the terminal feature at one end, the large Parco is crossed with the Arco della Pace forming the terminal feature of the main artery, the Corso Sempione, upon the other side.

It might be said with a large amount of truth that Milan is typical of other Italian cities, in respect of its roadways and streets, and it may generally be accepted that when the roads are wide they are very often very wide, and when they are narrow they are more often very narrow. The contradictions in town-planning, it would appear, have been made a special study, and exaggerations occur with great frequency.

There is, however, much to be admired in the fairly successful attempts that appear to have been made to lay down what may be termed main arterial roads. A study of the plan of the city will disclose an outer circle and an inner circle, the former consisting of the broad, noble Bastioni di Porta Venezia, upon which opens the fine Piazza containing the central station before named, linked up by a series of broad avenues describing almost a circle and enclosing the main portion of the real city of Milan.

The inner circle consists of much narrower roadways describing a circle (or nearly so) round the older city, crammed full of items of world-wide interest, and enclosing a perfect labyrinth of narrow circuitous arteries which radiate almost without exception from the Piazza del Duomo.

Whatever points of objection may be raised to the

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general lay-out, there remains very considerable evidence that the entire scheme, with all its defective parts, was at least the result of a well-considered general plan.

There is consequently much to be learnt by the modern student of town-planning by a careful study of the efforts of the city planners of centuries ago.

To say that Milan is architecturally interesting is too commonplace; to the architect it is a city of delight.

The churches of San Lorenzo and Sant' Ambrogio, the oldest and quaintest, respectively, in Milan, also San Sepolero, San Simpliciano, San Babila, and San Celso, were the only structures of the Early Christian and Romanesque periods to survive the destruction of Frederick Barbarossa (assisted by the Ghibelline towns of Lombardy) in 1162.

With the exception of these few churches he destroyed the entire city, and made a clean sweep of everything.

Five years later, however, Milan was re-built by the allied cities of Brescia, Bergamo, Mantua, and Verona, and in 1176 Barbarossa was finally beaten at the battle of Legnano, at a little place of that name some nine miles from Milan.

Owing to the comprehensive improvements to which many famous structures were subjected within the city, Milan has, since the Napoleonic period, and particularly since 1859, assumed a modern appearance.

(To be continued.)

SOME MODERN MOVEMENTS IN PAINTING.*

By WILLIAM STRANG, LL.D., A.R.A.

IT is to be presumed that there have always been new movements in Art, from the earliest bone-engraving period, and the earliest Egyptian, down to the present day. No improvement or development could take place without influencing a number of people doing the same kind of work, as even the natural, though not always estimable, human liking for novelty would be a sufficient stimulus. It is but natural if one man discovers something new, or a new way of doing an old thing, that it at once attracts other people. This is quite apart from the idea that it is an improvement on what it supplants, for Art is not a progressive improvement in excellence, and does not depend like science on the accumulation of actual knowledge, but is an individual means of expression, and in that way is like the use of language. 'Tis true a mediæval cathedral is not the expression of one individual, but it may be the individual expression of a people or a period moved by similar thoughts. In modern times, the growth of liberal ideas has taken one form of the passionate desire for personal statement, and that the individual character of the artist should be the principal merit in the work. The desire to create in all ways a new art is, of course, doomed to failure, as all art of value must grow, whether by development or rebellion, out of what has gone before. This is the process which has occurred in art up till now, with one exception, which will be mentioned later.

This striving for original expression may be good in some ways, and may produce works of extreme excellence, but it has the drawback of creating in these latter days something like anarchy, and the denial of all authority. It is within the knowledge of most of us that when a young man holds an exhibition of his work, which, he fondly hopes, contains nothing that can be recognised as traditional, he feels the lack of authority; and in the absence of this tradition he invents and prints as an introduction a more or less elaborate creed of his beliefs and unbeliefs in art. This may have been invented to fit the pictures; not the pictures to fit the creed.

This lack of authority and tradition may be a great evil, as all artists at once pulling in different directions may not achieve so much or so important a result as if they were in harmony and had ideas in common. It may also result in a cringing art, servile, and seeking by any means for public approval and favour, and also to attract attention and patronage by freakish or shocking methods. It may be that movements arise to make up for the want of the balancing effect of tradition, as a number thinking alike may give the feeling of authority which is needed.

But it is impossible to expect Art to have ideas greater than are prevalent in its own time, and when individual anarchist thinking about things in general is carried to such lengths as at present, one can look for nothing else in Art. When there is no collective opinion, and each man, quite irrespective of his wisdom, holds that his opinion, because it is his, is as good as his neighbour's, then nothing gets done. And during this time of awful war our acts are a very fair index to the mental state in which we find ourselves. There is no strong authority, and so we fall back on the counting of heads by vote, forgetting entirely that most of the heads may be empty and valueless. A majority has no monopoly of wisdom.

We can imagine an art which may be quite independent of the goodwill or patronage of either majorities or minorities, so aristocratic and dominant that it will ignore either approval or disapproval, which will say, "Thou shalt believe in me." This godlike art, serene and yet impassioned, is not to be recognised in modern times, nor yet a long way earlier—in fact, not since the great and austere art of Egypt. This art, so calm, so simple, and yet so dictatorial, seems to last through the ages as a standing reproof to all our petty little vices of individualism, and puts to shame most of our ideas which we call great. One can see no trace of pleading for approval in it, no sign of seeking to please by anything we now consider pleasing. It is aloof, and seems to put the onus of sympathy and admiration on the beholder. If ever there was an art with authority, if ever an art preached the greatness of mankind as against all little creeds of individuals, if ever an art can convey an idea of the universe, it is this art. Colossal, and with the dignity which violence never can even approach, it imposes itself on the human imagination as no other art has done since.

So that even when we come to modern movements we must not expect them to convey a greater message to mankind than has already been given. 'Tis true that the greatest influences that have moved mankind for good have been of different kinds, of direct revelation from God, of great Gospels that have given mankind ideals that have continually raised him further from the animal world to the spiritual, from art of all forms, and from philosophy. So that art, like revelation, having already exercised its great influence for good, cannot be expected to exceed such a height as it has already reached. Of course a period in our history may occur again when man's ideas may be loftier and more near the divine than ever they have been, but, alas! this will not probably be in our time, when love of material well-being and lust of power seem to be the only things worth striving for.

A movement sometimes occurs and flourishes in one country, though the idea originated with a single artist in another country, such as the effect of Constable on France.

In speaking of a set of artistic ideas which we call movement, it must be remembered that each has not a separate period, but that they overlap and that two or more may rise and flourish concurrently. For instance, the English pre-Raphaelite movement for the greater part exercised its activities at the same time as the Romanticists in France. In many ways the English have been pioneers, and though ideas originating here have been carried further and perhaps better in other countries, we at least deserve credit for inventing them. This is most noticeable in the case of Constable, who when he

* Abstract of a lecture delivered at Carpenters' Hall.

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exhibited in Paris created something like a revolution in landscape. Some French painters even repainted their pictures already hung in the exhibition, in the heat of new ideas shown in Constable's pictures. Delacroix acknowledges the influence the English painters had in freeing France from the deadly effect of Classical tradition.

We in this country have never suffered from Classicism. Almost every European country where art flourished has been at one time under the thrall of Classical art, and that period has had a most deadening influence. France alone has produced under it great works that live and will live.

David in the first period of Classical influence, in his portraits, and Ingres in the second, also in his portraits, have survived an influence that in other countries was barren of any good result. It is curious that they both succeeded best in a branch of art, portraiture, which is dependent on more naturalism than their general theories allowed. The contrast between the chilly idealism of their subject pictures and the human appreciation of human character of their portraits is most marked. Painters in this country, with one or two exceptions, have escaped the Classical danger. Where definite influences can be traced, such as in English landscape, it has been found to be from Holland rather than Italy that the effect has come. Rembrandt, Ruysdael, and Hobbema have been the forces that have moved English artists. Holland itself had a period of Italianised painting, but the works are not remembered; while those that escaped the harmful influence, such as the painters just named, with others, notably Franz Hals, are the pure native product, whose work has a living effect even on the art of to-day.

The survival of a strong human interest, as against an abstract set of rules, is most noticeable in this case. Another country that might be cited as showing that the art of one country cannot with advantage be transferred to another is Spain, which came under the influence, first of the Low Countries at the time of the Spanish occupation, and at a later period of artists imported from Italy. Neither of these influences produced works of lasting effect, while the art peculiar to Spain, which was an uncompromising naturalism, has retained its place and is still a living force. Velasquez returned from two visits to Italy, where he saw the great art there, absolutely untouched by its influence. El Greco, although a foreigner of Italian training, became through living in Spain most characteristically Spanish. Goya at the end of the eighteenth century was again a naturalistic Spaniard, and served as inspiration to a still later generation.

On the face of it, it looks as if art generally was much indebted to portrait painters of all times for bringing back art, when it ran after strange ideals, to a healthy frame of mind based frankly on Nature.

The most notable band of modern artists in this country was the Pre-Raphaelites. Starting about 1850, with three or four members, young, enthusiastic, clever, with a fresh gospel—or, rather, an old gospel—which they adapted to modern performances, they soon made notable converts among the younger gifted artists. They were students of the Royal Academy, which institution, while remaining conservative and permanent, seems an extraordinary fruitful source for promoting and provoking rebellion. This is all to its credit as long as the results are estimable.

Rossetti, Holman Hunt, and Millais were responsible for the formation of the group known as the Pre-Raphaelite Brethren. It was founded on their common ideas that art should be based on Nature and truth; not a new discovery according to present-day thinking, but which to them, in view of the conventional art they saw around them, opened a vista like an undiscovered country of which they were the pioneers.

The brave young men—what splendid fellows they are!—who for an ideal can risk and adventure everything. They are the only men with enthusiasm enough to put their ideals to the proof, and with energy attempt what they believe. Their performance may sometimes be faulty, but failure in a glorious cause is magnificent. All honour then to all ardent youthful spirits who, having genius to see the evils of their own times, have the courage and ability to follow and carry out their convictions.

The Pre-Raphaelite Brethren found that the natural truthfulness existing in Italian art up to Raphael's time had gone; that conventional poses and expressions, through weak imitations since then, had ceased to reflect either Nature or truth or any valuable human quality. They found that human emotions in pictures had degenerated into stereotyped attitudes that signified nothing, and that pictures were composed according to stale arrangements which could be learnt from text books, and expressed no living idea either of the artist or the story he had to tell.

Later other young members were added, and then they became in open revolt to the pictorial ideas of the day. They did not copy the old Italian pictures which they admired, but tried to discover the principles governing them, and applied these principles to their own modern works. They rebelled against using an idealism which, being false by nature, could only give a false grandeur, and any humble truth was better than that. They did not believe in giving a general impression of any subject, but while closely copying all details still retained the larger effect and significance of the picture. This of course meant that any superficial cleverness or bravura in the actual painting was disapproved of. This honesty being unusual did not escape condemnation.

Surely no movement was started with higher or more sincere aims, which they hoped would be appreciated as time went on. And appreciated they were and still are, and in many ways are a standard for later painters to follow. That all movements wax and wane, and that in art nothing is final, is nothing against them, for they are bred in a tumult of spirit, the more exalted, the more likely it is to suffer from exhaustion and reaction. The exhaustion is shown in the followers, who not having the stimulus of inventing the idea soon show traces of being merely followers, however sincere, and not originators. Thus it is that a painter can rarely make use of an idea given him, as one of the greatest stimulants to enthusiasm and invention is that he alone should be responsible for the creation of a work of art from start to finish.

There were, outside of this movement, two great artists that cannot be passed without mention. Though both received their main inspiration from Italy, it was not the art before Raphael only that influenced them. These two were Alfred Stevens and Watts. Stevens comes nearest to the definition "Great Artist" that this country has ever produced.

About this time, or a little earlier, occurred a revolt in France against existing ideas of art, which were of a different kind to those which caused the Pre-Raphaelites to rebel. The Romanticists fought against Classicism with all its repressive tendencies, its limitation of inspiration to one period, and its rules as to what was proper and beautiful Classically. So much was forbidden that these rules provoked the young and ardent spirits to cry "Down with Everything." They found that the world as they knew it was full of passion and life and romance, which directly contradicted all the rules and regulations that were held to be sacred. They said "Who made these rules?" and that if one period had the right to make rules, another had the right to break them. So the revolutionists went violently to extremes in everything. As all the canons of Classicism directed correctness, coldness, absence of things which were characteristic of real life, so the new school revelled in colour, action and exaggeration, and the unforgivable sin was dullness, even if correct. Love, hate and all elemental feelings were given full play, and fiery colour lent vigour to fiercer action. They also had their counterpart in literature, and plays full of passion and

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movement sprang up and opposed the stilted dramas of the Classical school. The battle raged for many years, hard knocks and free-speaking were bandied about during that struggle for greater freedom in art. Perhaps owing to the influence of Constable and the English painters they devoted themselves principally to landscape.

In England there was no rigid Classical tradition to fight against. The practice of water-colour, a comparatively modern art, had given taste for high tones and bright colour, which was a marked contrast to the traditionary brown respectability. It lent itself to direct painting out of door as against the manufacturer of dark studio pictures, and this brightness was adopted by the landscape painters. This impression of fresh Nature was first applied by Constable, who saw vividly and with delight that trees were green and skies were blue, and that all Nature had a brilliance and sparkle that tradition had never taken account of. He therefore threw it all overboard. Though he was descended from Hobbema there is not a trace of copying, but he deliberately became free and independent. He was the first to get the effect of light and air. And all this was studied not for the sake of realism, but for the expression of a "mood" in landscape. Of course, mood means a human feeling which one would not think Nature possessed; but then all painting is the expression of a human being, and therefore mood is nature plus the painter. Thus it was that Constable appealed vividly to the new French school whose strong point was their strong feelings.

Whatever the reason most of the modern movements are French. It may be that we are less inclined to band together in schools, preferring individual expression, or that new movements are looked upon with greater dislike, and so crushed out of existence. Revolutionists are always in a hurry, and in art they are often as violent as in life. So that we usually find at the front of the babble a man who is well fitted to force his opinions on the mass. Such a one was Gustave Courbet, the apostle of Realism. No means were too violent or brutal to attract attention to his new creed. His was not really a very high ideal, but it was inspiration enough for him to produce great things, and sometimes people are greater than the creeds they profess.

There is a tendency in later days for the development of new schools more in the direction of technical methods than in any great new message. Consequently the Post-Impressionist movement is not of as great moment nor of such wide-reaching effect as some of the early ones, which had brought very drastic changes in opinion. The belief that actual representation had reached its highest point of skill had thrown artists back to see that a simpler convention was necessary to make a more direct appeal. Realism had had its day, and the reaction was in the direction of more primitive forms of art. This, of course, may be affectation. But the reason for it can be seen and perhaps excused. It became part of the creed of the Post-Impressionists that there should be no photographic imitation of Nature. And certainly they carried the idea to such a pitch that natural objects could barely be recognised in their pictures, the effect being gained by general suggestion or by a particular paint manner.

There is a later movement in the present day which seems to be a complete break in the continuity of art. Since the earliest attempts it has always represented some known natural object, however primitive, to the extent that it could be recognised, which gave some message to human understanding as well as pleasure to the eye. But now this late theory is the greatest revolution of all. It is that pictorial art should not represent any object at all, but by an arrangement of lines and colours produce an emotion without the use of any known symbol. This theory, one ventures to think, can never successfully compete with the ideas founded on representation. It is impossible to foretell the direction pictorial art will take. But one ventures to think it will continue to speak the language it has used and portray things that will appeal and be recognised as Nature.

WALL PAINTINGS IN TWO SUSSEX CHURCHES.

AT the last meeting of the Royal Archæological Institute, held in the apartments of the Society of Antiquaries, Burlington House, W., a paper was read by Mr. Philip M. Johnston, F.S.A., F.R.I.B.A., entitled "Wall Paintings in Arundel Church, Sussex, compared with Similar Contemporaneous Examples." The lecturer principally confined himself to describing the representations of the Seven Deadly Sins and the Seven Corporal Acts of Mercy which are on the walls of the parish churches at Arundel and Trotton, both in the western part of Sussex.

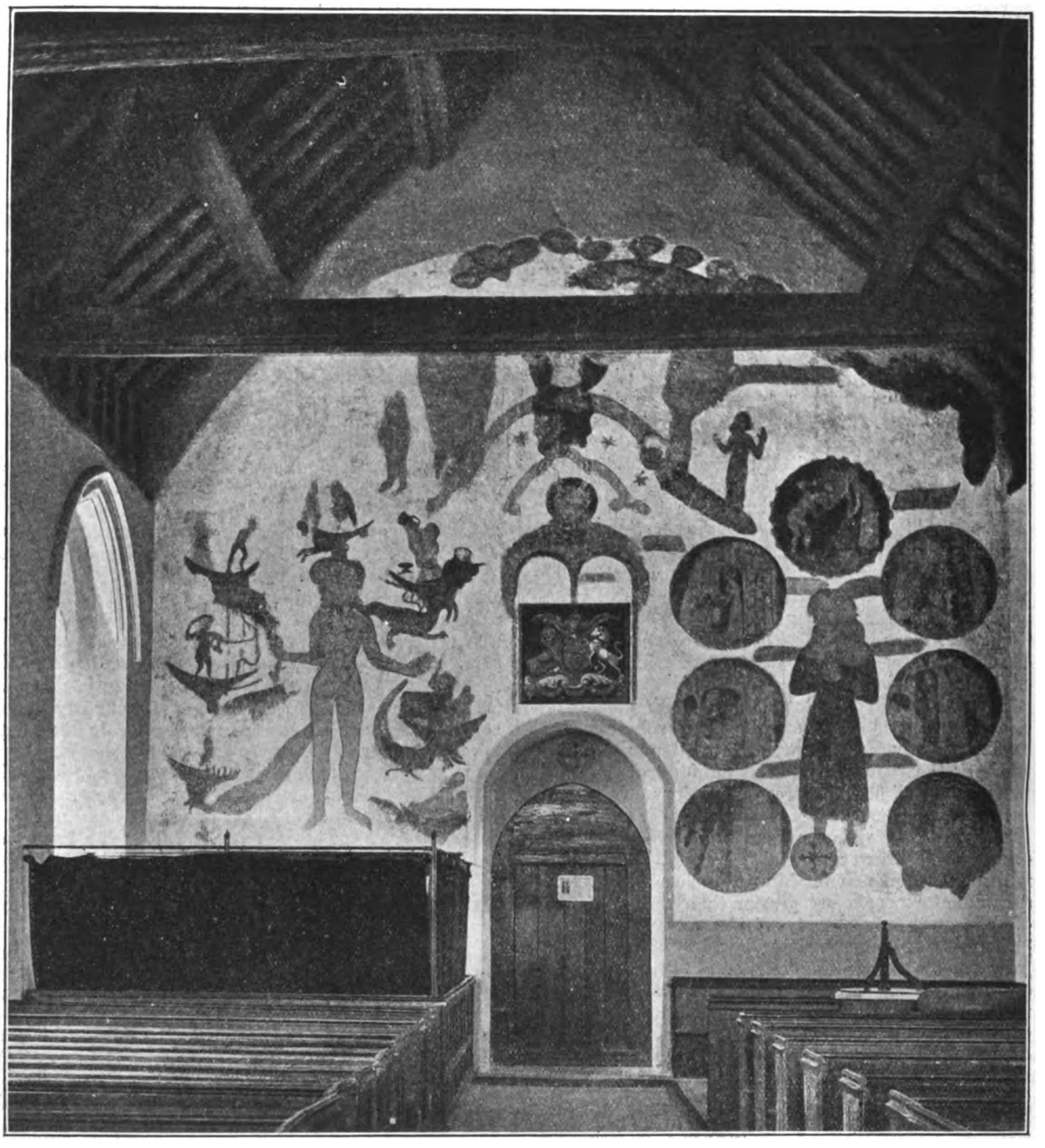
The parish church of Arundel was rebuilt in 1380 by Richard Fitzalan, Earl of Arundel. At the same time the Earl pulled down a Norman structure and upset a struggling foundation of Augustinian Canons (established by Roger de Montgomery before 1094) to make room for his collegiate church, dedicated to the Holy Trinity, consisting of a master, twelve secular canons, or priests, two deacons, two sub-deacons, two acolytes, two sacrists, and four choristers. The college survived until 1544, when the avaricious Henry VIII. seized it. After Henry had got everything he could out of it he transferred it on advantageous terms to the Earls of Arundel, in perpetuity, on payment of 1,000 marks and an annual rent to the Crown of £16 16*s*. 0¾*d*. Though the collegiate church is a structural extension eastward of the parish church, there is very satisfactory archæological proof that the two were always distinct. The eastern extension, as already mentioned, was dedicated to the Holy Trinity, and the western part, i.e. the parish church, to St. Nicholas. The parish altar seems, curiously, to have stood in the south transept, instead of in the central space; the north transept containing the chantry of Thomas Salmon, founded in 1430, together with an altar of St. Christopher. It was not until about the time of Elizabeth that the parish altar was set up under the central tower. The iron grille, filling the tower arch behind it from apex to floor, is one of the finest things of the kind in England, and probably dates from 1380 also. The arch itself is now blocked up by a roughly-built brick wall—the present Duke of Norfolk has offered to face it in any way which may be thought best—a reminder in itself of the law-suit of 1879, whereby the Duke established his claim to the exclusive ownership of the entire eastern limb, which had always been ecclesiastically separate from the parish church. The tombs and other furniture in the Fitzalan Chapel are of quite exceptional beauty, despite seventy years of shameful ill-treatment through which they passed in the nineteenth century. The chapel, as it stands to day, is the most perfect tomb-house in England, and may be accepted as one of the most satisfactory restorations in the country.

After giving a general account of the adjoining parish church, Mr. Johnston proceeded to discuss a remarkable pair of wall paintings, the Seven Deadly Sins and Seven Corporal Acts of Mercy, which are in the north aisle. These were fairly recently cleaned and sprayed by Mr. Johnston, who, in restoring Trotton Church, a few miles away, had brought to light a coeval series of the same subject.

Few, if any, of the counties of England can have been richer in mural paintings than Sussex. The reason for this is not far to seek. Sussex building stone was scarce and not too good; roads were notoriously bad, so much so that the famous oolite was imported in barges from Caen on the opposite coast, as both cheaper and far better than local material. Wherefore, stone was always used sparingly, and the money that would elsewhere have gone to the masons was applied in decorating wall spaces with schemes of painted imagery.

A subject which occurs in about twenty English examples, and which was very popular with the later schools of church decorators—the Seven Deadly Sins contrasted with the Seven Corporal Acts of Mercy—has been found in at least four Sussex churches, viz. Trotton,

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WALL PAINTING AT TROTTON CHURCH, SUSSEX.—After restoration by Mr. PHILIP M. JOHNSTON, Architect, F.S A., F.R.I.B.A.

Arundel, Wisborough Green, and Mid Lavant; only the paintings in the two first still remain. In contemporary literature Chaucer gives practically a mediæval sermon on the same subject in the Parson's Tale.

At Arundel the "Sins" are painted over the north door, and are shown in the usual manner by a gigantic nude male figure, with flying dragons issuing from those parts of the body which the particular sin was supposed to reside in or affect. The painting of the hands and bearded face is very fine. The three most perfect of the Sins are Pride (a King with crown and sceptre), Gluttony, and Avarice. The "Acts of Mercy" are depicted as in a great wheel of seven compartments, in the centre of which is an Angel—by some wrongly supposed to be Our Lord. The Clothing of the Naked, Feeding the Hungry, Giving Drink to the Thirsty, Visiting the Prisoner and the Sick can be made out in the several compartments, and the Taking in of the Stranger and Burial of the Dead complete the composition. Begun about 1390, certain of the subjects only got as far as a thin red outline, with a suggestion of yellow colouring. The work was continued about sixty years later by a second and much inferior individual. On the same north wall to the eastward is a later and more elaborate painting (*c.* 1450) of the Blessed Virgin wearing a mantle, upheld by a portly demi-Angel with iridescent wings; a black and white pavement is shown under the Virgin's feet.

Trotton is an out-of-the-way village between Midhurst and Petersfield. During the restoration of the church in 1904 Mr. Johnston brought to light on the great west wall of the nave, roughly thirty feet wide and high, with only a door in the centre to break its surface, a painting of the Last Judgment, combined with representations of the Seven Deadly Sins and the Seven Corporal Acts of Mercy. They probably owed their existence to Lady Margaret de Camois, under whose will, dated 1387, a sum of money was left for the reparation of the building. The only colours used are Indian red, yellow ochre, pink and white, with black and perhaps a little green in the lettering, &c. At the top, beneath a canopy of clouds, is a figure of Our Lord seated upon the rainbow, with the "circle of the earth" under His feet. On either side their guardian Angels are presenting small nude figures, symbolising the souls of the blessed and the cursed, to whom respectively are addressed the Divine

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sentences (on scrolls) "Venite, benedicti," and "Ite, maledicti." Beneath this group, and over the door, is a demi-figure of Moses, the great law-giver, horned and holding the Tables of the Law. Flanking it, and on the spectator's left—but, curiously, on Our Lord's right hand—is the figure of Pride and the Seven Deadly Sins. Hell yawns beneath him, and a goggling demon with cow's horns is striking out with a flesh-hook at the Sins issuing from his body. Pride is shown as of gigantic stature (about nine feet high actually), with curled beard and ringlets and quite nude, save for a monstrous turban or head-dress—in satirical allusion to the extravagant erections which fine gentlemen of those days placed upon their heads. His hands are outspread, as if inviting attention to his Sins. Winged dragons, something like cock-pheasants, are attached by their long tails or by ligaments to his hands and other parts of his body. The distended up-turned jaws of the dragons are vomiting forth the Sins. At the top, on the spectator's right, is Gluttony—a title "Gula" being discernible on a scroll above—a paunchy figure of a greedy man with a cup upon his knee, but impatiently drinking out of a large flagon or leathern jack. Next below is Socordia, Sloth (or Accidia), in which the lazy man is sleeping upon his bed and his wife stretching herself and yawning, while a bell round the dragon's neck is tolling for Matins; behind is seen his unused chest of tools. Below this again Avaricia plainly tells its story in the picture of the Miser, one shoe on and one off, sleeping on his money chest, with coins and string of jewels which have dropped from his grasp. Luxuria, or Lust, has been partially destroyed; a demon appears to be tempting a man and a woman to illicit intercourse. Ira, Anger, shows a fool in parti-coloured clothes stabbing himself in a fit of passion, urged thereto by a demon. Invidia, Envy, is very imperfect. Superbia, or Pride, the parent or root sin, which crowned the man's head, has almost entirely disappeared.

Contrasted with this moral warning, on the opposite or northern side of the wall is the figure of the Good Man surrounded by Acts of Mercy performed by him in his lifetime. He also is of colossal size, with flowing locks and beard, habited in what may be intended as the franklin's gown or perhaps as the frock of a religious, with a hood falling over the shoulders. His hands are joined in prayer, and he looks upwards with a pious expression. Scrolls floating round him bear the titles of the Cardinal Virtues that adorned his life, Fides, Spes and Caritas. The Acts of Mercy are shown by quaintly realistic scenes, painted within roundels, between two and three feet in diameter. That above his head illustrates Our Lord's words, "I was naked, and ye clothed Me." A charitable lady is seen helping a beggar into a shirt, apparently under the open sky, as clouds are shown on the red background. "I was an hungred, and ye gave Me meat" is illustrated by the next roundel on the left, in which beggars or pilgrims are seen receiving broken meats at the door of a charming half-timber house; and in the corresponding roundel on the right the lady of the house is giving drink to thirsty wayfarers from a graceful flagon, in illustration of "I was thirsty, and ye gave Me drink." On the left again is the illustration of "I was sick, and ye visited Me," in which the sick man appears to be receiving Extreme Unction. Opposite to this is a very perfect scene representing the words, "I was a stranger, and ye took Me in"—a well-drawn figure of a man in parti-coloured clothes (half his body red and the other light pink, with the legs counter-charged also), standing in the porch of a quaint timber house, the interior of which is visible behind him. At the bottom, on the left, is the scene illustrating "I was in prison, and ye came unto Me," in which are shown the towers of a fourteenth century castle, like that of Bodiam in Sussex, and out of a grated opening in one of these round bastions a woe-begone face is peering, while a party of gentlemen, attired in the costumes worn in the reign of Richard II., are advancing to greet him. In the opposite or seventh roundel the Burial of the Dead, reckoned as making up the last of the Corporal Acts of Mercy is shown: the priest in alb, amice and crossed stole is committing the body to the earth, while the widow, apparently, is weeping at the foot of the grave, and an acolyte sprinkles the corpse from a vat in his hand with holy water. There are not very many examples of this interesting subject remaining in England, and none so complete as this Trotton painting.

Mr. Johnston mentioned that he had described and illustrated the Trotton painting in an article on the Mural Paintings in Sussex Churches, published in the "Memorials of Old Sussex," from which much of the foregoing has been quoted.

TOWN PLANNING SCHEMES AND OPEN SPACES.*

By Lawrence W. CHUBB, Secretary of the Commons and Footpaths Preservation Society.

ONE of the most widely entertained hopes to which the passage of the Housing and Town Planning Act gave rise was that this epoch-making measure would assist in solving a social problem by facilitating the dedication of open spaces for the public use and enjoyment, and the preservation of sites of historic interest or natural beauty.

Before considering the results of the working of the Act, it seems desirable to recall how open spaces in this country were previously secured, and what means local authorities have at their disposal for supplementing the special open space powers conferred upon them by the Housing and Town Planning Act.

It is unfortunate that the bulk of our existing pleasure grounds should have been provided in a fortuitous and haphazard fashion, without relation to the needs of rapidly expanding communities or to the population of particular localities. We thus find in London such contrasts as that while in Hampstead there is one acre of public open space for every 212 inhabitants, in Southwark there is only one acre for every 14,499 inhabitants.

The Inclosure Movement.—One reason is not far to seek. The predominant part of our open spaces is made up of ancient common land, and in the main it is only in those parishes like Epsom, or even Hampstead, which escaped the meshes of the wide-spread net of the inclosure movement, that anything like sufficient open spaces are to be found.

Greater London, the area of the operations of the Metropolitan Police, possesses altogether nearly 16,000 acres of common land, or land over which the common rights were extinguished subsequent to the arrangement made for its preservation for public purposes. The condition of the Metropolis in the matter of open spaces would indeed be serious were it not for the public-spirited efforts of Lord Eversley and the other founders of the Commons and Footpaths Preservation Society whose work, begun in 1865, has resulted in the protection of these common lands, for the commons constitute 64 per cent. of all Metropolitan open spaces to which there is public access by right or otherwise, including Crown property such as Bushey Park. Nevertheless, the net capital expenditure upon, and contributions towards, the acquisition of parks and open spaces by the Metropolitan Board of Works, the London County Council and the Borough Councils has been no less than £1,939,125 in respect of 5,377 acres. This vast sum does not include the expenditure of the City Corporation incurred in acquiring Epping Forest, Coulsdon Common, Burnham Beeches and other open spaces.

It is too late to lament that most of this expenditure has been incurred owing to the lack of foresight of previous generations. All around, as well as in London itself, commons were enclosed in a wholesale manner until fifty or sixty years ago. Some have been bought back and restored to public use. Had the bulk been saved

* Abstract of a Paper read before the Town Planning Institute.

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from enclosure London would have been amply provided with a veritable girdle of breathing spaces.

Metropolitan Commons.—The first general recognition of the value of open spaces arose with the movement to stop the enclosure of commons. This resulted, not only in numerous fights successfully waged against unlawful encroachments, but in 1866, in the passing of the Metropolitan Commons Act, which prohibited the further enclosure, by Inclosure Act, of commons within the area of the Metropolitan Police District. As an alternative to enclosure, this Act provided means for placing the commons under popular control as open spaces. Commons thus dealt with are protected by means of regulation schemes prepared by the Board of Agriculture and confirmed by Parliament, the managing authority consisting of the London County Council, the Urban District Council, the Parish Council or a composite Board of Conservators.

There are still over 2,000 acres of unregulated common lands situate around London in districts where town-planning schemes are in contemplation or are eminently necessary. It is much to be desired that all such commons should be embraced in the relevant town-planning scheme and ear-marked as permanent open spaces. Should the lord of the manor or other owner of the soil of the common not be willing to vest his interests in the local authority, the Council ought at least to initiate a regulation scheme, so as to secure power to make bye-laws for the maintenance of order, the prevention of nuisances, and the use of the land for recreation. The consent of the lord of the manor or commoners is not necessary to a scheme under the Metropolitan Commons Acts.

Rural Commons.—The country in general is not in so favourable a position as the Metropolis to obtain the effective control of commons, but when tracts of such land exist within a town-planning area they must have an important bearing upon the plan finally adopted for the development of the area, and the Local Government Board should be asked to consent to their insertion in the scheme.

In view of the difficulties involved in any atttempt to interfere with a common or existing open space, save by way of an equitable exchange, in most cases it will be wise not to attempt any serious alterations of its boundaries, but rather to build up the scheme around the common or open space, as has been done in the case of Norton Common, Letchworth, and the 80-acre open space in the Hampstead Garden Suburb, and as is proposed to be done in the case of Hodgehill Common, which is situate in the area of the North Yardley scheme of the Birmingham Corporation, and the Poors Common at Ruislip.

How can the local authority secure control of a rural common in order to preserve it as an open space in connection with a town-planning scheme? In many instances it will be found possible to induce the lord of the manor to transfer his interests to the Council, especially if the mineral, timber, and sporting rights are of little value. An attempt should be made to effect an arrangement of this character, for all open spaces resorted to by the public ought to be vested in the local authority.

But whether it is, or is not, possible to obtain a conveyance or lease of the soil of the common, there can be no doubt that it is most desirable that the management of the common should be placed under direct public control, for an uncared-for tract of open land situate in a neighbourhood where the population is growing is almost certain to become a nuisance unless it is placed under effective management.

The Housing and Town Planning Act offers no assistance in this direction, and the Council should, therefore, take steps to formulate a regulation scheme under the provisions of the Commons Act, 1876, or the Commons Act, 1899. The former Act is useful in those cases in which, in addition to regulation, it is deemed necessary to adjust or determine the rights of the commoners. Its machinery is, however, costly and cumbrous.

It will be found preferable to proceed under the Commons Act, 1899, which was designed to simplify the regulation of commons. This measure enables the District Council or Urban Sanitary Authority to make a scheme, substantially in the form of schemes under the earlier Act, save that the scheme cannot provide for the adjustment or determination of rights. The Board of Agriculture have issued a prescribed form of scheme with clear explanations as to the procedure.

Provided the lord of the manor, or persons representing at least one-third in value of the interests in the common, do not object, after three months the Board of Agriculture approves the scheme, and the Council is thereupon able to make bye-laws and manage the land as an open space. The expense of obtaining such a scheme should not exceed £15, and the advantages of the regulation of commons are so great that no Council within whose town planning area a common is situate should rest content until the land has been regulated and placed beyond the scope of possible enclosure.

Until this has been done the land must always be in some danger of enclosure in those districts where ancient customs are changed and common rights endangered by the conversion of arable into building land.

Village Greens.—Another type of space which is especially valuable from the point of view of amenity as well as of utility is the village green. From time immemorial such spots have existed and happily, in default of statutory directions, early legal decisions made it clear that a customary right of recreation must not be disturbed. For instance, in the time of Charles II. it was held in the case of *Abbot* v. *Weekly* (1665) I Lev. 176, that a custom "that all the inhabitants of a vill, time out of memory, had used to dance on a certain close at all times of the year at their free will for their recreation 'was a good custom' as it is necessary for inhabitants to have their recreations."

The local authority should endeavour to obtain a conveyance to themselves of the soil of all village greens in town-planning areas, or at least to secure the control of the management of the land. Rights of recreation are somewhat intangible and many village greens have been lost to the community by the lack of evidence of some sort of local control.

Recreation Grounds and Open Spaces.—Other existing public open spaces have either been acquired by purchase or gift and are no doubt already vested in the local authority. An exception to be looked for is that of recreation grounds or fuel allotments set out under Inclosure Acts. An effort should be made to arrange for the permanent preservation and management of these types of open space, for it is to be regretted that the land often remained in the hands of the lord of the manor or some other private individual in no way responsible to the public.

The powers enjoyed by local authorities under the various general Acts dealing with open spaces are, unfortunately, by no means comprehensive, but as adjuncts to the Housing and Town Planning Act they may sometimes be used with advantage.

The principal Act to bear in mind is the Open Spaces Act, 1906, which consolidated a series of previous enactments. It defines an open space as "any land, whether inclosed or not, on which there are no buildings, or of which not more than one-twentieth part is covered with buildings, and the whole of the remainder of which is laid out as a garden, or is used for purposes of recreation or lies waste or unoccupied."

This Act, subject to certain consents, authorises trustees to lease or transfer to the Sanitary Authority, or to the County Council, with or without payment, or by way of gift, the control and any other interest they may have in any open space under their care.

It further confers on the Councils indicated, as well

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as upon Parish Councils, wide, but not compulsory, powers to acquire, whether by gift or purchase, land for public recreation. It is not necessary that the land should lie within the area of the authority desiring to acquire and hold it. The Act can thus be employed in the case of the purchase or acquisition of land under a town-planning scheme running into another district.

It should also be borne in mind that under Section 164 of the Public Health Act, 1875, any Urban Authority may, by agreement, purchase, take on lease, and maintain any land for public walks and pleasure grounds. By Provisional Order they may obtain compulsory power. Where the Public Health Act (Amendment Act), 1890, has been brought into force the Council may plant and maintain trees in roads, and contribute towards the purchase and maintenance of open spaces provided.

There are further permissive powers enjoyed by Muncipal Corporations under the Recreation Grounds Act, 1859, and the Town Gardens Protection Act, 1863, and the acquisition by Councils of recreation and pleasure grounds is possible under the Public Improvement Act 1860, where that Statute has been adopted.

These powers, which at first sight appear far-reaching, nevertheless left much to be desired. In general they gave the local authority no effective machinery for preventing the disfigurement of their district.

To stay degradation of this kind the Council could only agree to buy the land at any value the owner cared to place upon it.

(To be concluded.)

BASIC SULPHATE OF LEAD.*

By HAROLD JAGER.

VERY little is known of this important pigment. If one turns to the well-known text-books, we find that a considerable amount of valuable information is given relating to this material; but the descriptions given are incomplete, inadequate, and sometimes inaccurate. Again, if we turn to text-books on chemistry, we find references to basic sulphate of lead conspicuous by their entire absence. On the other hand, an authoritative document, presented to Parliament by command of his Majesty, and entitled "Report of the Departmental Committee Appointed to Investigate the Danger Attendant on the Use of Lead in the Painting of Buildings," gives an almost startling prominence to basic sulphate of lead.

History.—Whereas lead carbonate is a product of great antiquity, its uses having been known for probably over 2,000 years, lead sulphate is a discovery of the last half-century. Products, however, must not be judged by the length of time during which they have been known; they should be judged on their own merits.

There seems to be a tendency on the part of a great many people to maintain that there is only one pigment in the world that is of any use, and the name of that pigment is hydroxycarbonate of lead, commonly known as white lead.

It is not definitely known when lead sulphate was first discovered. It was not until about the end of the eighteenth century that the idea of utilising as a pigment the fumes produced in smelting processes with lead sulphate ores was first attempted on a practical scale, but inasmuch as the pigment so obtained was generally of a grey colour, the idea was of small commercial importance.

The first serious attempt to produce lead sulphate on a commercial scale was probably made in the U.S.A. by Messrs. Lewis and Bartlett, of Philadelphia. They took out several patents which date from 1869. Starting from the idea that fumes were produced in smelting processes, they set themselves to produce these fumes in greater quantities by utilising a combined reducing and oxidising furnace.

The records of the Patent Office are full of processes for the production of white pigments direct from lead ores, and all of them bearing close resemblance to Lewis and Bartlett's first invention. The majority of them, however, were unable to effect the production of fumes on a commercially paying scale; and, what is more important, though they succeeded in producing a good white pigment, they produced along with it such quantities of inferior colour and impure composition that their only memorials to-day are the records and reprints of their inventions. At least two direct processes, however, survived:—

(1) The American process, founded on the original patent of Lewis and Bartlett, with all the improvements subsequently added. The product of this process is known as sublimed white lead, and according to Holley its production increased from about 4,000 tons in 1902 to 8,000 tons in 1907, and is said to have approached since that date nearly 30,000 tons.

(2) The English process, founded on various patents by Hannay.

Nomenclature.—Considerable doubt exists as to what is the proper name or description to be applied to basic sulphate of lead.

In the author's opinion basic sulphate of lead can be properly called white lead.

Two years ago an attempt was made to obtain a legal decision, but the matter was settled before trial, and no evidence was produced on either side. It is unfortunate from the point of view both of the general public and the parties interested that a definite decision was not obtained; but in the meantime there is certainly no law or authoritative opinion which can effectually prevent the sale of a lead sulphate pigment as white lead.

Leaving the legal aspect of the case and coming to the practical issue, which is more interesting for the majority of people, there is plenty of evidence to the effect that a lead sulphate pigment can be properly described as white lead; and there is no logical ground for supposing that this designation should be confined to a lead carbonate pigment. Apart from certain specifications, which are in no sense of the term definitions, the average consumer of white lead is practically concerned with getting a lead pigment which is also white, which will answer the required purposes. If lead sulphate will answer these purposes as well, or better than, lead carbonate, there is no logical objection to the same description being used.

From a practical point of view it seems highly desirable that a distinction such as that adopted by the Americans should be universally adopted, and the term sublimed be used as qualifying the name of the pigment, just as lead carbonates are known as stack white lead, chamber white lead, Krems' White Lead, &c., according to the process by which they are produced.

The expression White Lead Substitute is an entire misnomer for lead sulphate, seeing that the genuineness, the composition, and the cost of lead sulphate bear an almost equal relation to the genuineness, composition, and cost of lead carbonate.

Physical Characteristics. The material is in appearance a very dense, flocculent powder, and of a very pure white. Looked at in the mass it appears to have a slight primrose tint, but when rubbed out on glass and compared with other white powders it is undoubtedly a pure and brilliant white.

The lead sulphate is in an extremely fine and uniform state of sub-division. It requires an exceptionally strong series of lenses to bring individual particles into view under the microscope. Whereas many known pigments easily come into view at a magnification of 300 diameters, it requires lenses of over 500 magnifications to render visible a particle of basic lead sulphate made by this process. It has been computed that there are no less than 35,000 particles to the linear inch.

It has been stated basic sulphate of lead has less

* Abstract of a Paper read at a me ting of the Paint and Varnish Society on February 17.

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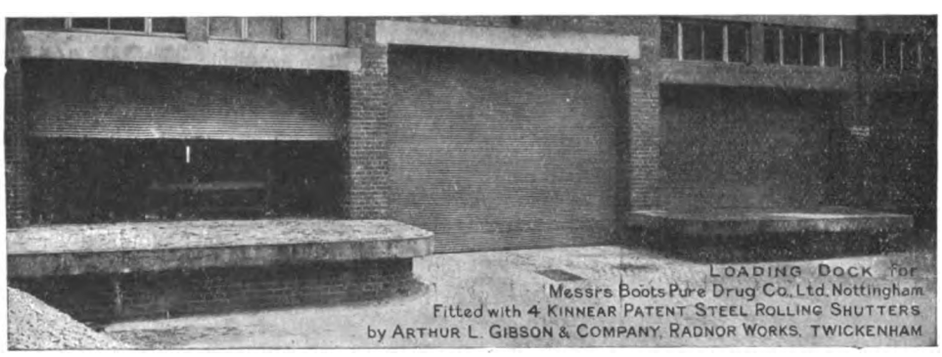
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obliterating power than lead carbonate. This is not true in fact, as can easily be demonstrated by taking equal weights of the two substances, suitably preparing them for application and applying them to surfaces of equal area and character, when a comparison of the two will be in favour of lead sulphate both for colour and opacity.

Now it is generally conceded that the protective power of a paint varies with the thinness of the coat or film, and therefore, other things being equal, the finer the subdivision of the pigment the greater will be its protection. Owing to this same quality of fineness, lead sulphate will absorb a larger proportion of colours, and so produce exceptionally brilliant tints. This is a matter which can be easily verified in practice.

In other respects, however, lead sulphate has the defects of its qualities. Thus, it can be made to absorb such a large quantity of oil that the paint so produced will suffer from lack of body, or density, and a large number of coats will be required to produce the same degree of opacity as is readily produced by coarser pigments.

By subduing the quantity of oil used, so making a very dense and what is called "round" paint, this difficulty may be overcome. But in this case there is greater difficulty in laying off the paint with the brush, and unless fine brushes are used, the surface will show brush marks, which for decorating purposes condemns it. It is no answer to say that a skilful brush hand can produce as good a job with a round paint as with a thin paint, for the number of skilful brush hands is, unfortunately, limited.

In practice, however, this defect is overcome by blending the lead sulphate with coarser pigments. When it is desired to produce a paint for decorative purposes, the material will blend well with, and fortify, any pigment that may be added, and numerous specifications are now in use which provide for the blending of lead sulphate with other pigments.

Chemical Characteristics.—As is well known, natural lead sulphate is an inert mass. Basic lead sulphate is not entirely inert, owing to the presence of a soluble element in the form of lead oxide. Generally speaking, basic sulphate is insoluble in acids at the ordinary temperature of the atmosphere. There is, however, one acid—namely, hydrochloric—to which it will re-act. Lead sulphate will not re-act to the ordinary fire test, which is so commonly applied by laymen for the testing of lead carbonate.

After all, it is not surprising that a substance which requires a temperature of some 3,000 Fah. in order to produce it should be chary of responding to an ordinary blow-pipe or coal-fire temperature. Fire is, perhaps, the greatest test of indestructibility, and the mere fact that lead sulphate will stand this ordeal by fire without damage or disintegration is a very strong point in favour of its use as a pigment.

Lead sulphate is anhydrous; it has no smell, and it gives off no emanation, whether poisonous or otherwise. Lead sulphate is slightly soluble in distilled water.

As to its *toxic* properties, one cannot do better than quote verbatim from the report of the Departmental Committee on the Use of Lead, as set out on page 102 of C.D. 7882, 1915. The Committee's report is in the following terms:—

"Reference was made from time to time in the evidence to the value of basic lead sulphate as a white paint material; while this is far from being a non-poisonous paint, it is less dangerous in use than the hydrated carbonate of lead, known as white lead, to the extent indicated by its smaller solubility in dilute hydrochloric acid; this solubility has been shown to be not more than one-quarter that of white lead, and it follows, therefore, that a restriction of the use of lead in paints to not more than 5 per cent. of soluble lead, would permit of the introduction of as much as 20 per cent. of basic lead sulphate into a leadless paint. Mr. Grant Hooper, of the Government Laboratory, in particular emphasised the importance of this, pointing out that a solubility limit would encourage the use of those forms of lead which are least soluble, and, therefore, least objectionable from the standpoint of health."

The above report does not distinguish between the pigment in its dry state and the pigment when ground in oil. There is all the difference in the world from the toxic point of view between a white lead paste and a white lead powder. The powder may be absorbed into the system by breathing, and the finer the state of subdivision of the powder the more easily it is absorbed; whereas the paste in oil is, comparatively speaking, harmless to use, provided the person using it is careful and cleanly in his habits. It may, therefore, be claimed with fairness that lead sulphate when ground in oil is practically harmless to the user, and in any event its toxicity is certainly four times less in strength than that of lead carbonate.

Practical tests show that basic lead sulphate acts as a natural drier on linseed oil, and in warm climates the use of driers may be dispensed with. In our own climate the use of driers in small quantities is desirable in assisting the natural drying action of the lead sulphate.

Uses.—Unattacked by acids, impervious to water, and of exceptional fineness in particle, it seems to be the best covering for iron-work yet discovered. The Paint Manufacturers' Association, of the United States of America, conducted exhaustive tests on steel panels (after four years from date of application) in the year 1908, at Atlantic City. Dr. H. A. Gardner, of the Institute of Industrial Research, reported as follows on Panels Nos. 4 and 5:—

"Panel No. 4, painted with basic sulphate white lead, and Panel No. 5, painted with sublimed blue lead, are both in excellent condition; although considerable chalking was shown on each of these panels, the paint films are intact, and of a tough, elastic nature, presenting to the touch a velvetty feeling.

"The sublimed blue lead was somewhat superior to the basic sulphate white lead, although the latter showed better colour maintenance."

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

DORSET.

Weymouth.—Brewery alterations: Messrs. Conway, Ltd., contractors, Commercial Road.

The Gloucester Hotel: proposed alterations. Messrs. Crickmay & Sons, F.R.I.B.A., architects, 49 St. Mary's Street.

No. 5 Coburg Place: alterations. Mr. S. Jackson, architect, Bridge Chambers; also

No. 12 Cove Street: alterations.

DURHAM.

Brandon.—Proposed infectious diseases hospital.

Butterknowle.—The "Royal Oak" Hotel: additions and alterations.

Darlington.—Infectious diseases hospital, Hundens Lane: administrative block additions. Mr. E. Winter, borough surveyor.

HAMPSHIRE.

Farnborough.—Pair of cottages. Mr. A. H. Dungay, architect, Alpha Chambers, and Mr. E. Ewins, contractor, Farnborough Road (£563 10*s.*); also

Shop and house, Camp Road (£7,980).

Eastleigh.—The "Chamberlayne Arms" Hotel: alterations. Mr. R. F. Gutteridge, A.R.I.B.A., architect, 9 Portland Street, Southampton.

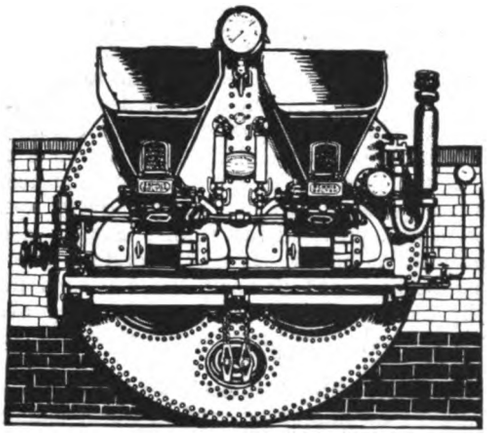
HERTFORDSHIRE.

Buntingford.—R.C. Church: Hugh Benson Memorial extension (£400) and presbytery.

Hitchin.—House, Norton: additions and alterations for Mr. W. H. Lucas.

"Three Horseshoes" public-house, Norton: extension for the People's Refreshment House Association, Ltd.

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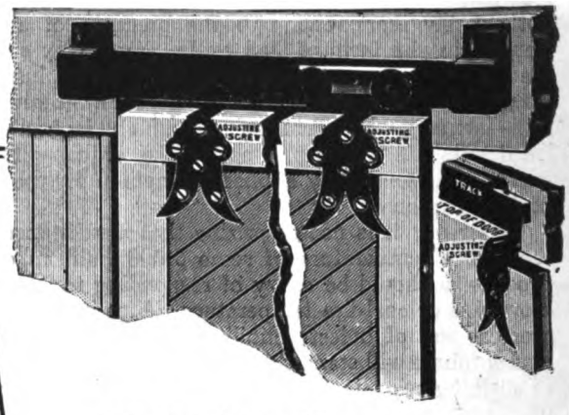
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ENGLAND—*continued.*

HERTFORDSHIRE—*continued.*

Tring.—Cinema, Western Road, for Mr. Darvell.
Temperance Hall, Christchurch Road.

KENT.

Sevenoaks.—The "Amherst Arms," Riverhead: rebuilding.

LANCASHIRE.

Atherton.—The "Lion" inn: alterations for Messrs. Greenall, Whitley & Co., Ltd. (of Warrington).
Grange-over-Sands.—Laundry, off Kent's Bank Road, for the Grange Laundry Co.
Manchester.—Garage, Gorton. Messrs. Thorpe & Collier, architects, 66 Deansgate.
The "Wheatsheaf" Hotel, Oak Street: alterations.
Picture Hall, Higher Ardwick. Messrs. Ashworth & Son, architects.
St. Anne's-on-the-Sea.—Buildings, Ashton Gardens, for the Council.
No. 7 West Crescent: additions and alterations for J. Heap Exors.

LEICESTERSHIRE.

Moira.—Two cottages, Ashby Road, for Mr. J. G. Sherwin (of Woodville).
House, Station Road, for the Moira Colliery Co.

LINCOLNSHIRE.

Lincoln.—Isolation hospital: tuberculosis block (£1,800).
Workhouse: Laundry and receiving ward reinstatement. Messrs. W. Watkins & Son, R.I.B.A., architects, St. Edmond's Chambers, Silver Street.

NORTHUMBERLAND.

Corbridge.—Cottages, Princes Street: additions and alterations for Mr. J. Davidson.

SOMERSET.

Glastonbury.—House, Benedict Street, for Mr. J. Merrick.
Yeovil.—Factory, Alexandra Road: additions for Messrs. Ewens & Robbins.
Factory, Victoria Road: additions for Messrs. Clothier & Shire.
Gas power house, Addiewell Lane, for Messrs. Atherton & Clothier.

STAFFORDSHIRE.

Chase Terrace.—Two houses, Water Street, for Mr. J. E. Craddock.

SURREY.

Peaslake.—Hotel (£2,750). Mr. A. C. Houston, A.R.I.B.A., architect, 81 High Holborn, London.

SUSSEX.

Hove.—St. Philip's Vicarage, New Church Road, Aldrington.

WARWICKSHIRE.

Birmingham.—Factory, Selly Oak. Mr. J. R. Shaw, architect.
Shops, Snow Hill. Messrs. Pemberton & White, architects, 40 Bennett's Hill.

WILTSHIRE.

Westbury.—Wesleyan Church.

WORCESTERSHIRE.

Stourbridge.—The "Old Cross" Inn, Lye: alterations for Mrs. M. A. Brooks.

YORKSHIRE.

Barnsley.—Peel Street Mills: alterations. Mr. P. A. Hinchliffe, A.R.I.B.A., architect, 14 Regent Street.
Beverley (near).—High Eske Farm: additional buildings. Mr. R. H. Whiteing, architect, 5 Ladygate.
Edlington, New.—Proposed hotel.
Ilkley.—Primitive Methodist Church: school (£500).
Wakefield.—Garage, &c., off Barnsley Road. Messrs. Simpson & Firth, architects, Southgate Chambers.

WALES.

Cardiff.—Offices, Bute Street: additions and alterations for Messrs. Cory Brothers & Co., Ltd. Mr. G. E. Halliday, F.R.I.B.A., architect, 8 Quay Street.
Llanelly.—The Furnace School: proposed extension.
Swansea.—Proposed cinema, Worcester Place. Mr. S. R. Crocker, architect, 6 College Street.

SCOTLAND.

Aberdeen.—Additional storage, Blaikie's Quay and Blaikie's Lane, for the Aberdeen Lime Co.
Tow Warehouse, Kingsland Place, for Messrs. Richards, Ltd.
Dundee.—Board School, Crescent Street: extension.
Warehouse, Dundonald Street, for Messrs. Malcolm, Ogilvie & Co., Ltd.
Glasgow.—Dining-rooms, Old Edinburgh Road, for Messrs. W. Beardmore & Co., Ltd.
Workshop, North Craigpark Street and Alexandra Parade, for A. L. Meteorlite, Ltd.
Musselburgh.—Picture palace, the Mall (accommodation for 1,054), for the Central Picture House Co., Musselburgh, Ltd.

THE TESTING OF CEMENT WATERPROOFING MATERIALS.

THE accompanying chart shows an interesting test of various waterproofing materials which was made by the Japanese Imperial Government. The competitive waterproofers are marked thus: No. 1, American; No. 2, Japanese; No. 3, German.

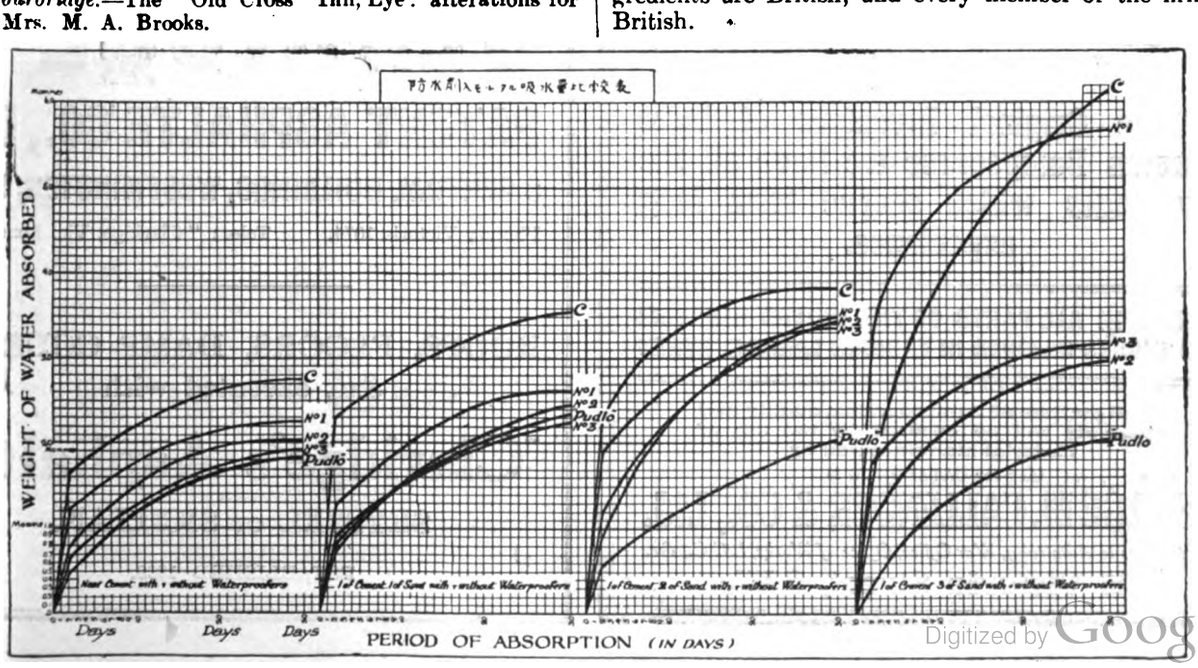
"C" represents ordinary unwaterproofed cement, and the British powder "Pudlo" is also denoted.

Columns 3 and 4 indicate that mortars made of two of sand and also, when composed of three of sand mixed with "Pudloed" cement, are more waterproof than the other waterproofing materials when used in a neat cement mixture.

It is evident that a waterproofer in powder form, perhaps from the ease with which it amalgamates with other ingredients of a granular nature, is a considerable help to an ultimately successful result.

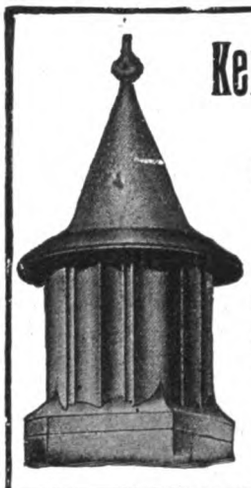
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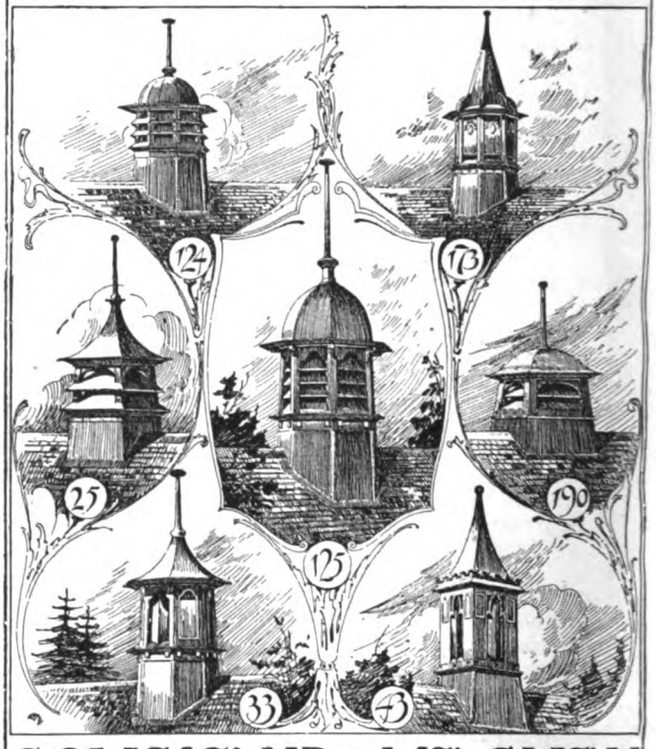
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THE ARCHITECT

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FORTHCOMING EVENTS

Monday, March 6.

Victoria and Albert Museum : University Extension Lecture XX. on "English Renaissance Architecture (1500-1900)—Sir Christopher Wren and His Works," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Surveyors' Institution : Paper entitled "The Management of Estates in Mineral Districts and Mineral Valuations," by Mr. G. Turville Brown, F.S.I., at 5 P.M.

Tuesday, March 7.

Institution of Civil Engineers : Paper entitled "Industrial Development," by Mr. Harold Cox, at 5.30 P.M.

Wednesday, March 8.

Manchester Society of Architects : Paper by Mr. J. A. M. Hunter, Licentiate R.I.B.A., at 6.30 P.M.

Northern Architectural Association : Ordinary General Meeting at 4.30 P.M.

Carpenters' Hall : Lecture entitled "The Effects of War on Art," by Mr. W. Robert Colton, A.R.A., at 7.45 P.M.

Thursday, March 9.

London Society : Annual General Meeting at the Royal Society of Arts, at 5.30 P.M.

British Museum : University Extension Lecture XXI. on "Early Christian Architecture (A.D. 300-900)" by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

THE BRITISH INDUSTRIES FAIR.

THAT we are beginning to learn from the enemy is abundantly clear from the inception of the exhibition or trade fair by the Board of Trade and the reception of the idea by British manufacturers. True it is that the present fair is limited to a few departments of British manufacturing industry, toys, fancy goods, pottery and glass, and printing and stationery, but these have been just the trades in which the German and Austrian manufacturers have especially exploited the British market.

Our manufacturers have risen to the occasion and shown that they are capable of turning out goods in the trades represented, not only equal but superior in quality to those produced by their competitors on the Continent. As regards competition price, under fair trade conditions and freed from the dumping of surplus manufactures at cut-throat prices, the best evidence that our countrymen stand secure is the general consensus of satisfaction with the orders received. For this British industries fair, it cannot be too often repeated, is a business concern. The exhibitors are there to sell in bulk what they show in sample, the visitors come to buy, and the best proof of the success of the fair is that they do buy.

The popular imagination has been chiefly centred on the quite remarkable showing of the British toy making industry as exemplified in the fair, but our interests led us rather to a hearty and thankful appreciation of the abilities displayed by our British manufacturers of glass and pottery. There is now not the slightest necessity for any British architect to allow a single electric light bulb in any of his buildings bearing the legend "made in Germany." All kinds of glass fittings for both electric and gas lights are made by British manufacturers exhibiting at the fair, amongst them Burtles, Tate & Co., of Manchester; A. & J. Davies, Ltd., of Stourbridge; Edinburgh and Leith Flint Glass Co., of Edinburgh; Molineaux, Webb & Co., Ltd., of Ancoats, Manchester; New English Glass Manufacturers, Ltd., of Tipton; H. G. Richardson & Sons, of Stourbridge; Stevens & Williams, Ltd., of Brierley Hill; Stuart & Son, Ltd., of Stourbridge.

Glass for pavement lighting, semi-prism, convex, beaded, chequered and prism lenses is made by A. M. Allan & Co., of Glasgow, and Greener & Co., of Sunderland. We were especially struck at the latter firm's stall with the decorative possibilities of some spheroidal segment lenses in coloured glass. Stevens & Williams, Ltd., include amongst their specialities badged glass for clubs, hotels, and steamships. Thus architects' requirements in the matter of glass are satisfactorily provided by British manufacturers. Rust's Vitreous Mosaic Co. are already well known to architects for their vitreous tiles and mosaics, and we were pleased to see samples of their manufactures at the fair. Mirrors in gilt frames are shown by Dewsbury & Co., Ltd.

In the pottery section we noticed the filters shown by the Fulham Pottery and Cheavin Filter Co., Ltd., and by Slack & Brownlow, of Gorton, Manchester, both of whom manufacture germ-proof porous filtering cylinders and various forms of pressure filters for domestic use, specially designed to replace foreign patterns. But the stall which most particularly engaged our attention in the pottery section was that of the Pilkington Tile Pottery Co., Ltd., whose range of colours and surface textures, eggshell, handmade antiques, and blended glazes furnishes an opportunity of selection in tiles for interior wall decoration and fireplaces, &c., which should satisfy any architect.

We have repeatedly expressed our view that, in these days of manufacture as distinct from handicraft, our art students must, if they are to earn a living and give the world the benefit of their artistic ability, learn to design beautiful things that can be produced in thousands by machinery. In the show by Hooper & Edman, Ltd., of Birmingham, we saw at the fair that some artists have learnt the lesson. Excellent designs were there seen carried out by modern methods of manufacture. The ideal of the "arts and crafts" movement has its place, but to the many this ideal is unattainable. Why, then, should they be condemned to put up with manufactured ugliness when beauty is possible for them?

Other examples of what we may call manufactured art were exhibited by the Artree Handicrafts, the Art Statue Co., and the Woodlands Handicrafts, their specimens including stained woodwork, statuettes, and other instances of the most modern and advanced types of original creative design applied to manufactures. Everyone cannot afford stained woodwork by a national gold medallist; there are many who would like to be able to possess such individualistic design and craftsmanship, but must be content with something of which hundreds of other people possess replicas. After all, a beautiful thing does not lose its beauty because it is exactly reproduced. Rarity is not beauty, and now that our manufacturers are turning their attention to producing beautiful things in quantity we should be thankful. That they are doing so the British Industries Fair bears ample witness.

We were, of course, delighted with the evidences of British skill in printing, whether in colours or in monochrome. There is no need now to go to Germany for work in mezzo-gravure, mezzo-chrome, or mezzo-tint. We architects can now get excellent pencils not "made in Bavaria." In short, our British manufacturers, given only a fair field, can hold their own in any department of industry.

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NOTES AND COMMENTS.

Our friends in Paris are taking a practical step in preparation for the rehabilitation of their war-damaged towns by organising an "Exposition de la cité reconstituée," which is to be opened on May 1 in the building known as the Salle du Jeu de paume, in which the Entente Architectural Exhibition of British work was housed. The programme embraces from an æsthetic and hygienic standpoint (1) the lay-out of towns and villages; (2) public buildings, urban and rural dwellings, industrial buildings; (3) materials and methods of reconstruction, internal arrangement of dwellings; (4) legislation, urban and rural economics.

By the death of Sir George Laurence Gomme London has lost more than an admirable official of the London County Council. Born in London and proud of the fact, all that concerned his native city was to him a matter of deep affection and painstaking study. His interest in the history of London and his efforts to preserve its landmarks were unceasing, and his assistance to the movement for commemorating Shakespeare's connection with London as the scene of the poet's life-work was always ready and valuable.

In the public mind Sir Laurence Gomme was thought to be the man who knew most about London. He certainly knew the facts about every side of the great community, and he had a more homogeneous idea of London as an entity than any other man. He knew broadly the character and peculiarities of every district, the value of its houses, its chief trades, and the special characteristics of its children, and everyone is aware of his inexhaustible knowledge of London antiquities and historical objects.

A correspondent of the "Guardian," with some reasonableness, contrasts the action of the Government in purchasing for the National Gallery Pieter de Hooch's picture, "The Music Party," with their "economy" in closing the National Art Galleries and Museums. The writer urges that there is absolutely no reason for adding another de Hooch to the splendid collection of pictures by the Dutch artist already in the National Gallery. There are three perfect specimens of his art there, and in the Wallace Collection are three other pictures of the finest quality. The "Courtyard of a Dutch House," No. 794, in the National Gallery might alone adequately represent de Hooch. There is no more beautiful expression of his genius in existence.

The Yorkshire Geological Society have in hand a scheme, the full execution of which is necessarily delayed by the absence on national war service of many of its younger members, for making an exhaustive survey of the rivers of the county, in which not only geological but botanical, meteorological, chemical, and geographical aspects generally are to receive attention. When one thinks of the great number and variety of the streams by which Yorkshire is watered, and the distances that will have to be traversed in the course of the investigations, this will be acknowledged a gigantic enterprise indeed, and, as is recognised by the Society, many years must elapse before all the ground can be covered. The proposal, which originated in the University of Leeds, is, however, deemed well worth the serious consideration which is now to be given to it. Nothing of quite the same kind has been done in this country before, though American geographers have been working on similar lines, and it naturally behoves Yorkshire as the largest county to set an example.

However much we may regret the fact, we cannot but agree that the decision of the Library, Museum and Arts Committee of the Liverpool Corporation to hold no autumn exhibition at the Walker Art Gallery until a year after the war is a wise one. It is not only the prospect of a call of £500 to £800 on the city funds to meet a probable loss on the exhibition that is to be considered, but the objection of using railway trucks and labour to bring pictures to Liverpool at a time when they could be more usefully employed in the service of the country.

An interesting letter appears in the "Guardian" from Mr. Mervyn Macartney concerning the date of the completion of St. Paul's Cathedral, which, from the account in "Parentalia," and thence copied into Milman and others, it has been usual to place in 1710.

In the Memoirs of the Strong family, written by Ed. Strong, dated May 12, 1716, and copied by his grandson 1740, it is stated that "about the year 1706 Ed. Strong, Junior, began the lantern on the Dome of St. Paul's, London, and on October 26, 1708, Ed. Strong, Senr., laid the last stone upon the same." This statement agrees with some of the entries in the Cathedral account-books, namely:—

October 1708 Edward Strong charged For 163 day ½ of mason, cramping the attick of the lantern, letting in the windows in the Crown of the Cone, letting in sev^{n} bolts and a chaine under ye attick cornice. Tooming down the crown of the Cone etc. at 2.6 per day	£20 08 09
For labourers 24 days at 1*s.* 6*d.*	01 10 00

Mr. G. W. M. Halley makes the following remarks on this subject in his pamphlet, "The Rebuilding and the Workmen of St. Paul's Cathedral from the Accounts":—"Although Strong makes charges in the following month, it is not for building, but 'for cleaning the work stained by the Timber in the Lantern, repairing what was accidentally damaged, and raising materials.' This is in November, where it would seem from the above extract that 'the scaffolding was actually being struck.' If the erection of the Ball and Cross can be taken to signify the completion of the building, then it was finished by the end of the year 1708. In September carpenters were 'framing and raising the cap for the Lanthorn,' and in November the plumber's account is settled for the lead of the cupola of the Lantern."

A study of the Roman occupation of Great Britain is contributed to the new number of "The Yorkshire Archæological Journal" by Mr. Edward Wooler, F.S.A., with particular reference to Piercebridge, Durham, where the Roman road from London to the Forth crossed the Tees. There was a great camp at Piercebridge, which "stands pre-eminent among earthworks, both in extent and character." It covered 10¾ acres. Hence its Roman name—Magna—the average area of a Roman camp being between three and four acres. Mr. Wooler computes that it was large enough to hold from 80,000 to 100,000 men, women, and children. The construction of the camp, whose outward ramparts were 8,070 yards long, was a stupendous undertaking. "Think," says Mr. Wooler, "of the thousands of men and women, animated by that spirit of patriotism for which Britons have always been renowned, piling up those enormous earthworks with deer-horn picks, wooden spades, and wicker and hide baskets, etc., erecting these formidable barriers merely by the strength of hand and back. Yet they accomplished this enormous undertaking, the main features of which stand out yet in strong and bold relief"—after nearly 2,000 years! Mr. Wooler thinks the camp was first fortified with walls about A.D. 140, under the Emperor Antoninus. The Roman station was 230 yards to the west of the Roman road. The whole village of Piercebridge is built of its stones, as also is Gainford Church. The indications of the fortress are still distinct; the fosse and vallum can be readily traced all round, and the position of the gateways fixed.

At a recent meeting of the Society of Antiquaries a gilded bronze boss of Irish work, *circa* 750, which was found at Steeple Bumpstead, Essex, was exhibited by permission of the vicar, the Rev. W. F. D. de Langdale. Sir W. St. John Hope explained that the boss was for-

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"CAMIS-ESKAN." VIEW OF LANDING.

Mr. A. N. PATERSON, M.A., A.R.S.A., F.R.I.B.A., Architect.

(Royal Scottish Academy, 1915.)

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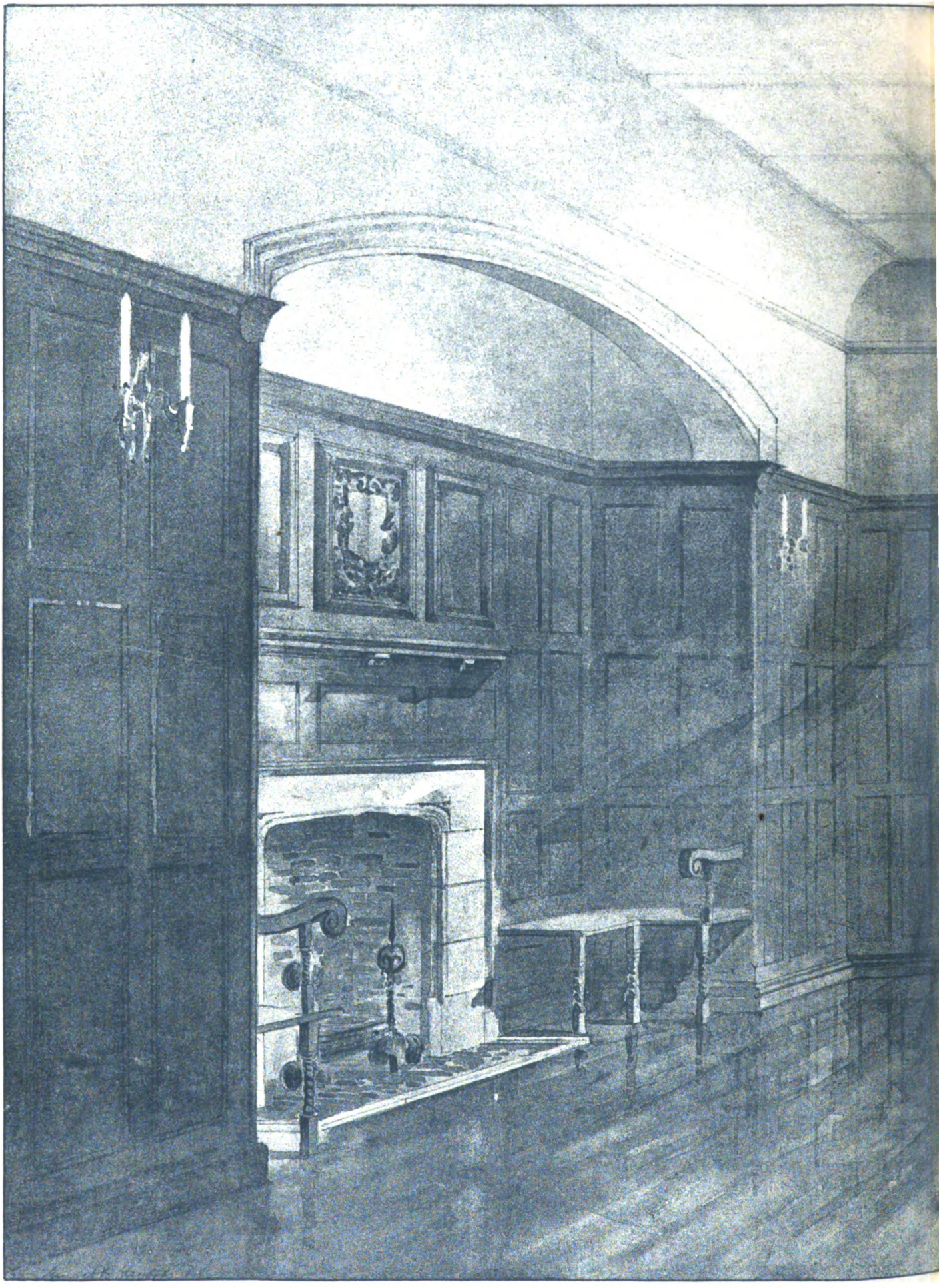
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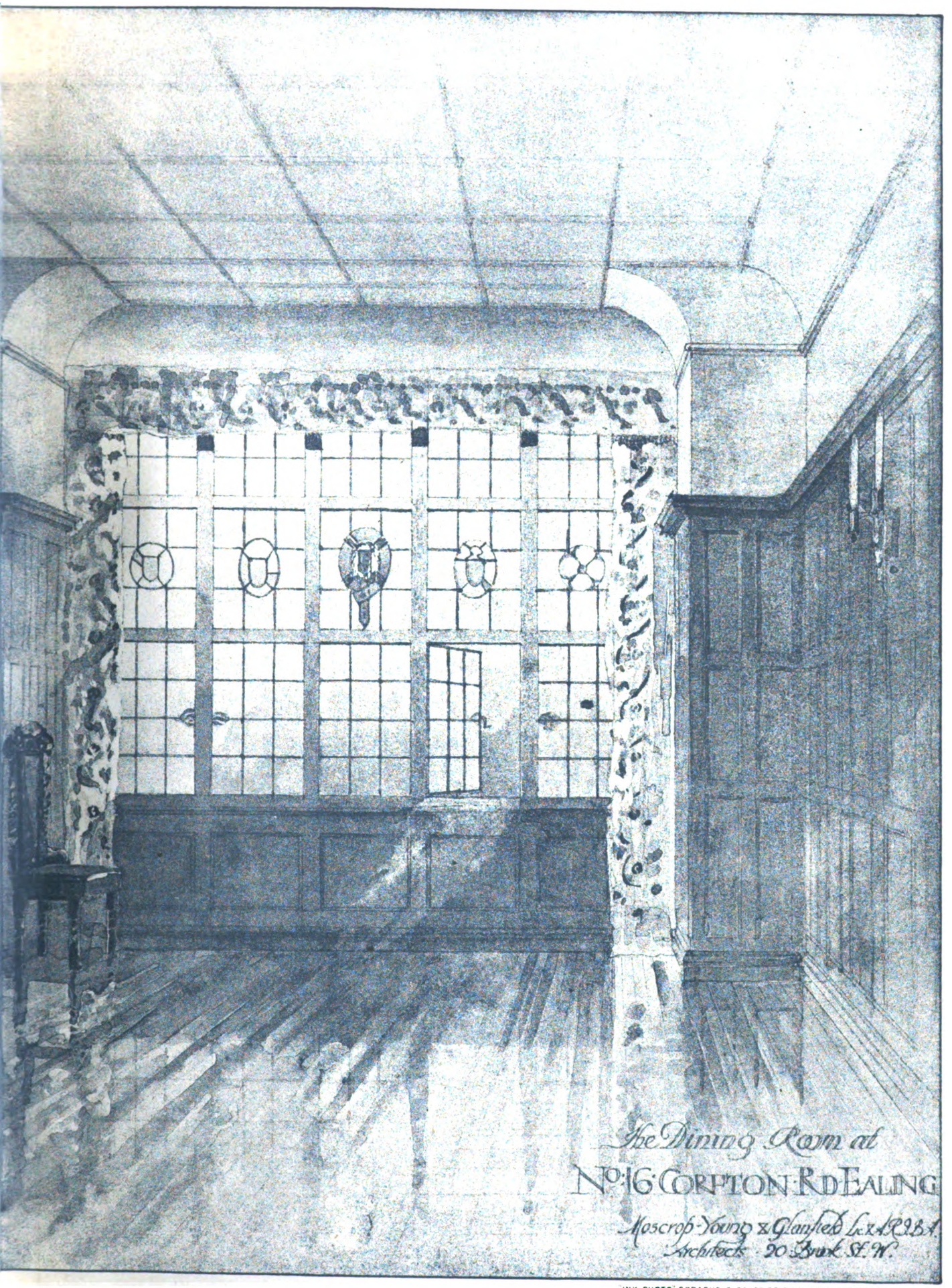
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(Royal Academy Exhibition, 1915.)

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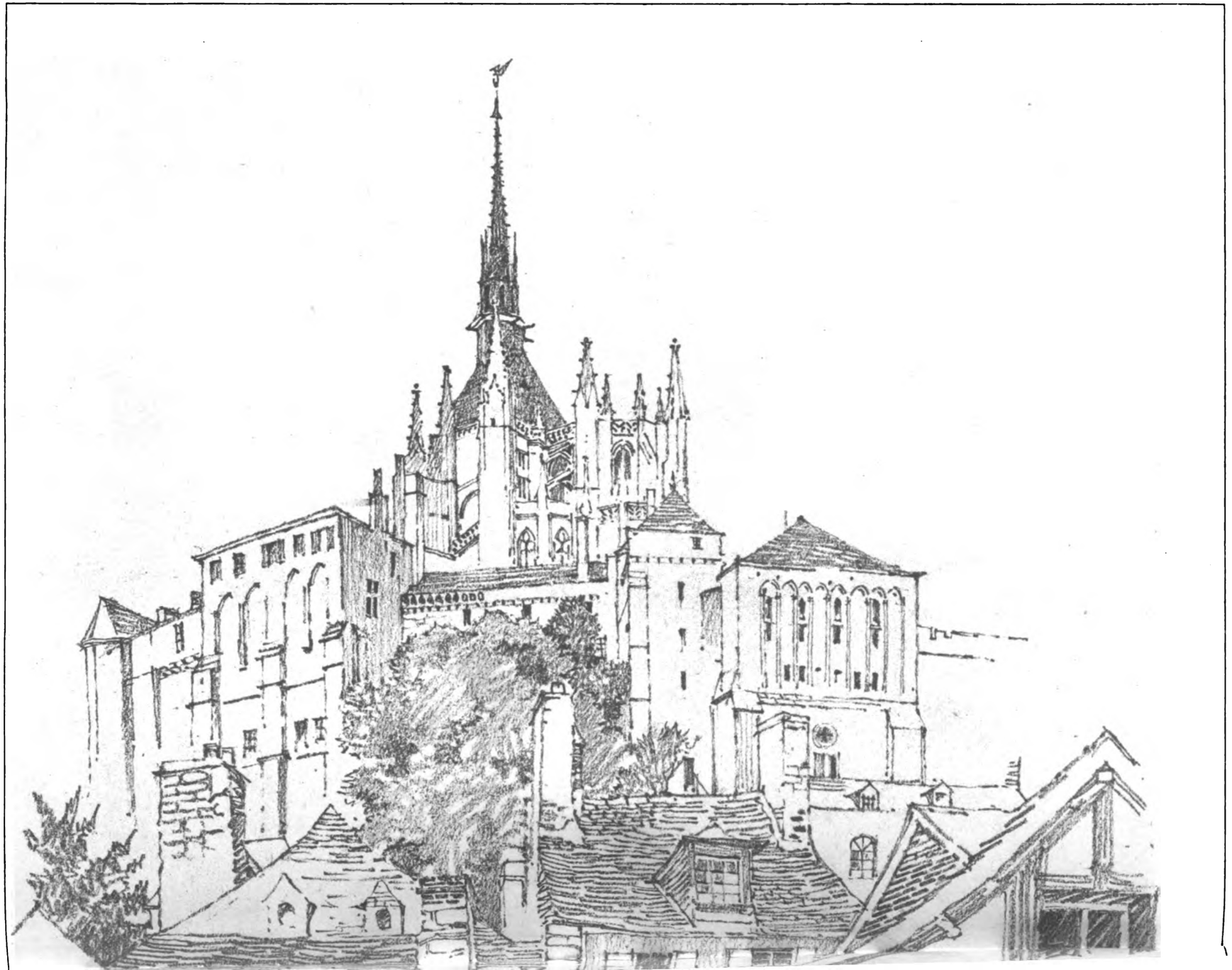
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FROM A DRAWING BY MR. PERCY LANCASTER, R.B.A., A.R.E.

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merly fixed on the back of the vestry door of Steeple Bumpstead Church, and the vicar had stated that his predecessor had discovered it in an old chest in the vestry, but originally, so far as was known, it had come from the east end of the church while a vault was being made. Mr. Reginald Smith, in a series of notes illustrated by lantern slides, said that the boss, while not a masterpiece, belonged to that period of Irish art, the eighth century, when masterpieces were common. It might probably have belonged to a shrine such as was frequently met with in the Christian period in Ireland when the devout collected and enshrined the bells and walking-sticks of their saints. He compared it with other examples of Irish art, such as the foot of the Ardagh chalice and the Tara brooch, and suggested that its presence at Steeple Bumpstead could probably be accounted for by its being a piece of Viking loot.

R.I.B.A. ANNUAL ELECTIONS.

THE "R.I.B.A. Journal," which appears on March 4, will contain the following announcement:—

"A Special General Meeting will be held on Monday, March 13, 1916, at 4.30 P.M., to consider a proposal which will be submitted by the Council in order to avoid holding an election for the Council and Standing Committees in 1916 during the absence of several hundreds of members serving with the Forces."

The following resolution will be moved on behalf of the Council:—

"That in accordance with the provisions of Clause 33 of the Charter, application be made to the Privy Council to sanction the suspension of the by-laws governing the annual election of the Council, the Standing Committees, and the Hon. Auditors; so that the Council, the Standing Committees, and the Hon. Auditors elected in June 1915 shall remain in office until June 30, 1917."

ILLUSTRATIONS.

MONT ST. MICHEL.

MONT ST. MICHEL is too well known to our readers to need description, but the view we reproduce may be novel to even those who have visited the place. The drawing by Mr. Percy Lancaster should be of interest as an excellent example of pencil work.

DINING-ROOM AT NO. 16 CORFTON ROAD, EALING.

THE panelling of this room is carried out in oak, fumigated to a dark shade; the old window in the bay was taken out, and oak frames put in, and leaded lights inserted, with steel opening casements, the roundels being executed in stained glass.

The fireplace was executed in stone, with Hopton Wood curb, the hearth being laid with Roman tiles.

The oak panelling was carried out by Messrs. Cohen & Sons; lead glazing, &c., Messrs. James & Co., Willesden; carving on mantel by Mr. Archer May, Harrington Street, N.W.; electric-light fittings by Messrs. Osler; and the general building work by Messrs. Dickens, of Ealing, all from the designs of the architects, Messrs. Moscrop-Young & Glanfield, Licentiate and A.R.I.B.A.

"CAMIS-ESKAN," DUMBARTONSHIRE.

THE illustrations shown give an idea of the improvement scheme designed by Mr. Alexander N. Paterson, M.A., A.R.S.A., F.R.I.B.A. The mansion house has a history going back to the fifteenth century; but beyond a dated window lintel on the back wall no trace of this earlier work or of the buildings erected in the course of the two centuries following were at first visible under uninteresting accretions, with accompanying demolitions of comparatively recent times. As the result of further investigations, the stone-vaulted ground storey of the early keep was discovered, though much cut up, and occupied by wine-cellars and stores, and this was cleared and opened up to form the inner entrance hall. The interior of the house generally was largely remodelled, and electric-light and other modern conveniences were introduced at the same time.

The builders were Messrs. Antony Trail & Son, of Helensburgh. Three other Helensburgh contractors were employed, namely, Mr. William Jack, carpentry work and oak finishings; Mr. John Horn, plumbing; Mr. James Williamson, slating and plastering. Messrs. Shirlaw & Thursfield were responsible for the modelling and execution of the decorative plaster ceilings from the architect's designs; Mr. J. B. Meiklejohn, electric-lighting; and Messrs. Guthrie & Wells, Ltd., decorations. The three last-named are Glasgow firms.

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—IX.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

HAVING reached Milan, there is on the part of the architectural traveller an unaccountable desire to make straightway for the Piazza del Duomo, that very fine square in the very heart of the old city, and the centre of the life of Milan, the especial attraction being, of course, that marvellous cathedral of Milan known the world over, and which has formed the subject of thousands of photographs and scores of paintings. This cathedral, which is the largest and the richest of all the churches erected in the Middle Ages, was built upon the same site upon which stood the early Christian basilica of Santa Maria Maggiore, and was commenced in 1385-6.

The existing cathedral was dedicated Mariæ Nascenti, and is one of the largest and one of the most elaborate in the world. Its construction was the work of about five hundred years, and it is built of white marble from the quarries at Candoglia and from other famous Italian quarries.

The interest attached to the marble giant is of the most absorbing character, and perhaps from the purely elaborate point of view, speaking only of the exterior, it is the most ornate church in existence.

Possibly there is at least one point upon which most, if not all, great architectural thinkers have agreed, and that is the very striking diversity in character and treatment existing between the exterior and the interior of this gorgeous temple.

A feeling akin to wonderment is engendered in the thought that the inexpressibly grand interior creation could possibly have been the conception of the same mind responsible for the exterior, so totally different are the two.

The style is a mixture of Gothic and forms of the Renaissance, and generally has been the subject of much hostile criticism; but it is perhaps the most magnificent example of the Pointed style in Italy.

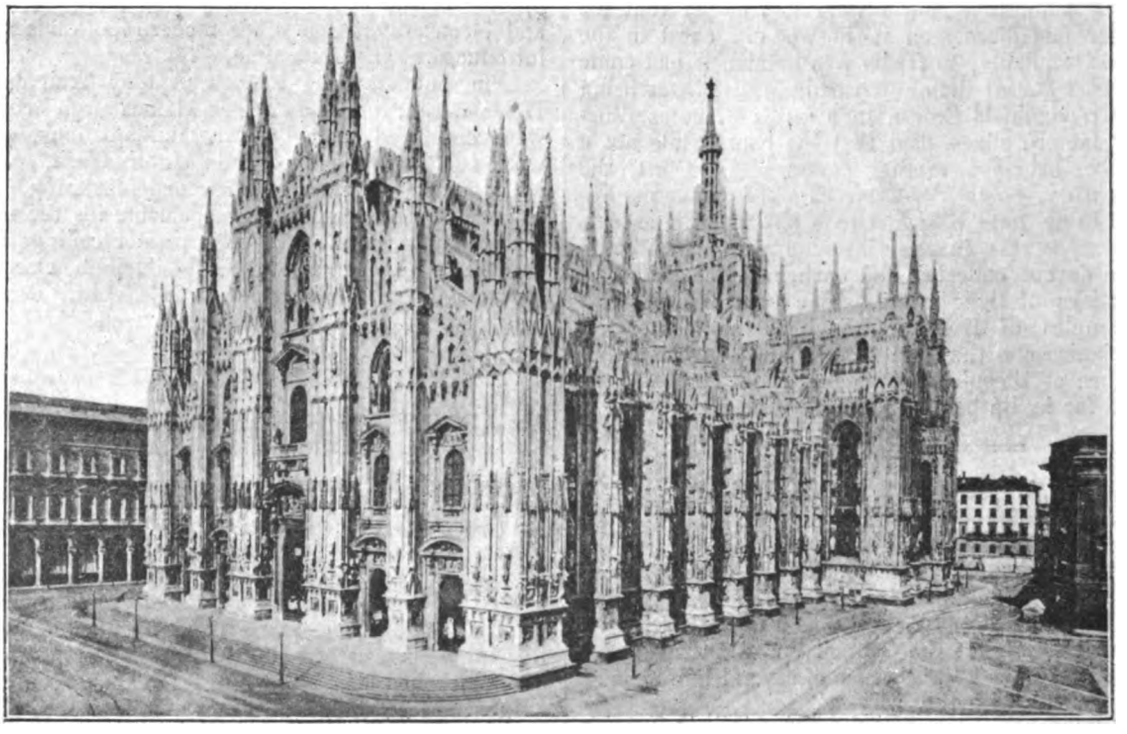
There is much to be said in favour of the contention that excessive ornamentation does not add to the dignity or sublimity of a religious edifice; but it certainly would appear that the case of Milan Cathedral is an exception to the rule, although this is not generally accepted, certainly not so with respect to the exterior.

Whatever may be said regarding the merits or demerits of this truly amazing structure, its general effect upon the individual, be he capable of analysing and criticising its various component parts or otherwise, is deeply inspiring.

Whatever its defects or faults from the strictly architectural and true form point of view, it is nevertheless at once a fascinating, impressively gorgeous, and, from the layman's point of view, harmonious composition, upon which the desire to spend vast sums of money upon a perfectly bewildering aggregation of unseen or lost ornamentation and detail has been successfully achieved. The result of this effort has been the production of perhaps one of the most wonderful edifices in the world.

It is also strange that with the apparently almost

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MILAN CATHEDRAL,

endless complexity of controlling minds recorded to have been responsible for the creation of this building there appears to the eye of the ordinary individual a homogeneousness in the whole conception, suggesting the creation of one controlling intellect.

It must be admitted that few, if any, similar structures suffered so grievously from such a multiplicity of direction as did this famous building in the centuries occupied by its design and construction.

Founded in 1386 by Gian Galeazzo Visconti, first Duke of Milan, and consecrated in 1418, the general design is of the latter part of the fourteenth century. Simone da Orsenigo and Marco da Campione are recorded as being among the earliest of its architects. The exact fixing of the date of the actual commencement of the erection of this building is a problem of some considerable difficulty.

Simone da Orsenigo is recorded to have stated that the work was commenced in May 1386, but after being destroyed by fire was recommenced in May 1387, and he was actually one of those entrusted with the superintendence of the work in its very early stages. Heinrich von Gmünden has been in many instances accredited as the author of the original design in 1387; but the best opinions, based upon reliable records, attribute the original design to Marco Frisone da Campione. He is often named Marco da Campione, and was apparently associated with Jacopo, also of Campione, a little village which stands between the Lake of Como and the Lake of Lugano. Marco died in 1390, and Jacopo in 1398.

According to the official notes it would appear that disputes were the " order of the day " when this work was progressing, and that in the early stages of the work its progress was very slow, attributable, so it is said, to these constant disagreements between the Italian and the German and French architects.

Among the latter foreign masters the following will give some idea of the trouble that must have existed in the carrying on of the works.

Nicholas de Bonaventuri, of Paris; Hans von Freiburg, Heinrich von Gmünd or Gmünden, Ulrich von Füssingen, Jean Mignot, besides Filippo Brunelleschi, Johann von Gratz, Giovanni Antonio Omodeo, and others.

The last-named, it is recorded, controlled the works from 1490 to 1522.

It is therefore very reasonably suggested that with such a variety of opinion and diversity of ideas, the resultant effort became a compromise between the Italian and northern points of view. The later superintendents of the work of erection included Filippo degli Organi, of Modena, who is recorded as having been the sole architect from 1402 to 1448, Giovanni Solari and Guiniforte Solari, who controlled the work from 1459 to 1476, Francesco di Giorgio, or Siena, Giovanni Dolcehuno, Cristoforo Solari, and perhaps even more unrecorded architects.

The crypt and baptistry were added after 1567 by Pellegrino Tibaldi, and these are in style out of harmony with the design of the rest of the building; but in this amazing structure that does not count for much.

The dome, it is supposed, was the design of Amadeo and Dolcehuno, and the minaret like spire surrounding it, which is 95 feet high, was added by Croce and Merula in 1759-69, over two hundred years afterwards.

The façade, which, it is recorded, was begun in 1616 by Ricchini, who was the cathedral architect from 1605-38, was more or less some suggest after Tibaldi's design, but remained uncompleted until the work was, in 1805-9, recommenced by order of Napoleon, under Carlo Amati. With it is further set forth certain alterations by Buzzi and Fel Soave, and this portion of the building was continued by Pastagalli.

The pinnacles and ornamentation thereof date principally from the first half of the nineteenth century. The neo-Gothic bronze door of the main portal, with reliefs from the life of the Virgin, was by Lodovico (1906).

The plan of the church is cruciform, with double aisles, and a transept also flanked with aisles, and its size is colossal.

It covers 14,000 square yards, 2,400 of which are used up by the walls and pillars of the fabric.

The interior is 486 feet in length, and the transept 289 feet across. The nave is 56 feet wide and 151 feet in height.

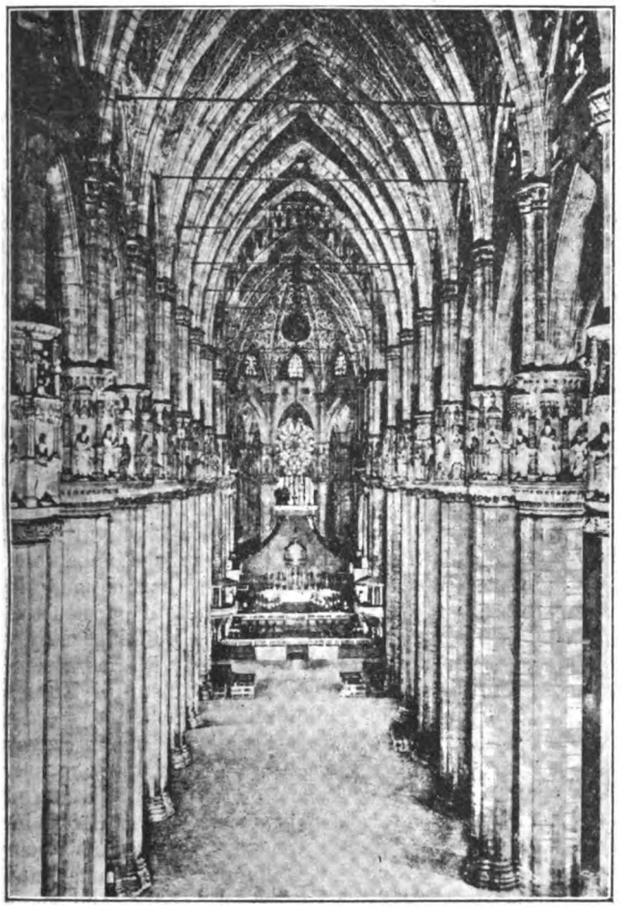
The façade is 202 feet in width, and the extreme height to the top of the statue of the Virgin is 354 feet, and the dome is 223 feet in height.

The various portions of this wonderful edifice are adorned with 135 pinnacles, and about 2,300 statues in marble on the exterior add to the truly amazing effect of this cathedral. There appears to be a vast forest of flying buttresses, pinnacles, and statues.

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It is stated that the stained glass windows in the choir are the largest in the world.

At first sight one is inclined to be almost overcome by the gorgeousness of the whole thing; the wealth of ornament and detail is so overpowering, and the most exquisite grouping of the crowded ornamentation adds to the sumptuousness of this glittering white pile. A walk of one or two hours round this immense structure is necessary to wear off that feeling of wonderment at the whole conception.



MILAN CATHEDRAL.—INTERIOR VIEW.

There is attached to this building, as will be noted by the long list of architectural supervisors, a wonderfully chequered history, and careful study of the periods through which its construction passed will reveal incidents of unique character.

Its size may perhaps be easier grasped by the statement that it is said to provide accommodation for 40,000 persons. Whatever faults may be found with the exterior of this sumptuous cathedral, upon which millions of money were spent and where practically whole quarries were exhausted to provide the marble, the interior provides universally a feeling of wondrous admiration, and upon entering this edifice there exists in the mind of the traveller a feeling of almost infinite awe.

Whatever criticisms may be offered upon the harmony of the combinations, creations of the various controlling minds, this wonderful pile will always appeal to the vast bulk of travellers, although at times it may appear somewhat vulgar and unsatisfying to the student of true forms in architecture.

The details of the interior are almost wholly German in character, and the bold dimensions of the gigantic pillars, each 11 feet in diameter, 52 of which exist, and the immense height combined with the sombre lighting effects, adds to the incomprehensible sublimity of this magnificent interior.

The vaulting of the roof, the tracery in the spandrils, which, by the way, strange to say, is only painted imitation, springing immediately from the huge clustered pillars, adds to the loftiness of the marvellous fabric.

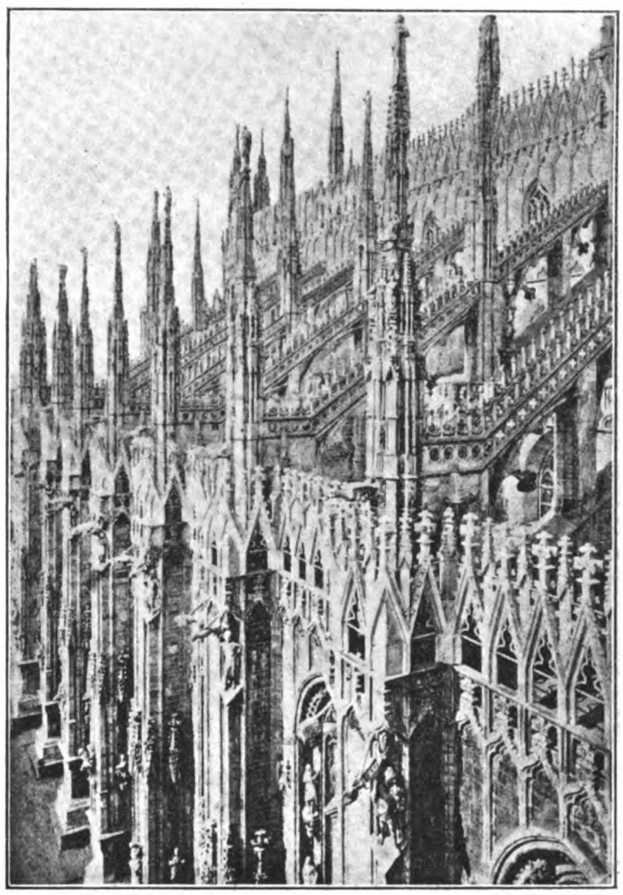
There is a veritable feast of interesting subjects in the interior of this church, and really a few days may be very well spent in wandering over its dimly lighted, impressively religious floors.

In the sacristy are the treasury, containing silver candelabra and statues of the seventeenth century, and a fine figure of Christ by Cristoforo Solari, and the south sacristy door is noted for its exceedingly rich sculptured Gothic ornamentation by Hans Fernach. The treasury also contains book-covers ornamented with Byzantine and Lombardic work of the early Middle Ages; diptychs of the sixth century; as well as an ivory censer originally owned by Archbishop Godfrey and used at the coronation of Otho II.

In the ambulatory there are very fine neo-Gothic confessionals for English, French, German, and Spanish languages.

In the right transept there is a huge stained-glass window with scenes from the life of San Carlo Borromeo, who consecrated this church in 1577.

The three stained-glass windows in the choir are very large and depict 350 Scriptural subjects; these were executed by Giovanni Bertini in 1884. The marble screens in the choir and the tabernacle of the high-altar were designed by Tibaldi (1568), and in the spandrels of the dome are statues of the four Latin Church Fathers, by Cristoforo Solari (1501).



FLYING BUTTRESSES, PINNACLES, AND STATUES, MILAN CATHEDRAL.

In the crypt beneath the great dome is the sepulchre of Borromeo, known as the Cappella San Carlo Borromeo, to which entrance is obtained opposite the doors to the sacristy to the north and south of the choir; within is the tomb of the saint built by Ricchini.

Carlo Borromeo was bishop of Milan from 1560 to 1584, and lived a fine life of self-sacrifice, full of many incidents of great courage. The reliquary, which was the gift of Philip IV. of Spain, is very richly adorned with valuable gold and jewels. The relics of the saint are to be actually seen in this tomb through its clear crystal sides.

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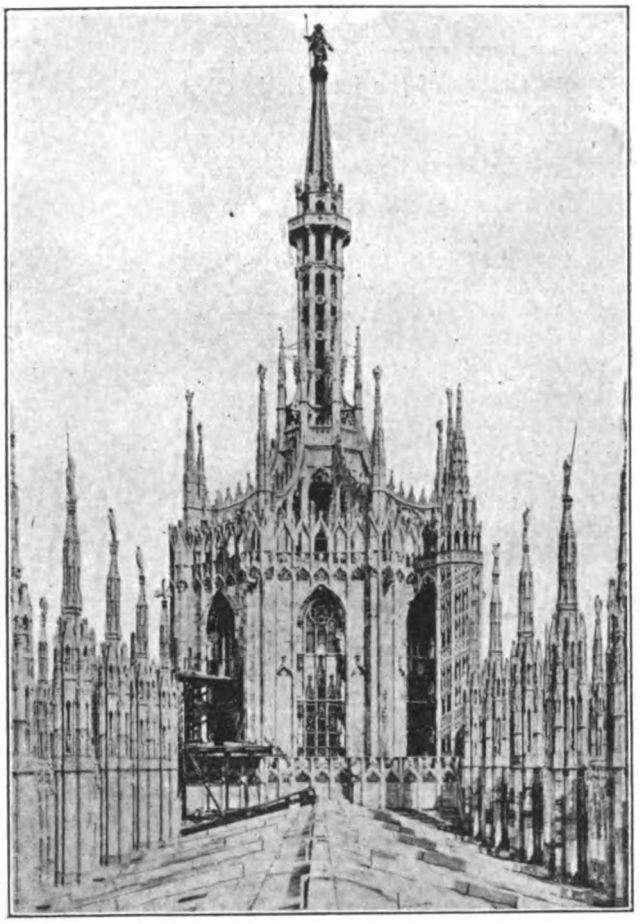
The Cappella is a wonderful little chamber, with richly panelled sides in solid silver, surmounted by a very elaborate and heavily sculptured frieze in high relief, also in silver, depicting scenes from the life of the saint.

A precious bronze candelabrum, in the form of a tree having seven branches, the lower portion being decorated with figures (ascribed to the thirteenth century) stands in the centre of the north transept.

The altar-piece in the left aisle, painted in 1600 by Baroccio, represents Sant' Ambrogio releasing Emperor Theodosius from ecclesiastical penalties.

A wooden crucifix which San Carlo Borromeo bore in 1576 when barefooted he carried out his missions of mercy during the plague, is also to be seen here.

A visit to the roof and tower of this cathedral is of very considerable interest, for apart from the fine opportunity thus afforded for closer examination of the forest of pinnacles, statues, and flying buttresses, and thereby providing a better appreciation of the immense labour and wealth that has been expended upon the ornamentation of this famous pile, the view obtained of the surrounding country is exceedingly extensive and inspiring. Steps to the number of 158 are to be mounted to reach the roof, and from this position of vantage, Monte Viso, 12,600 feet high, the highest summit of the Cottian Alps, the Mons Vesulus of the Romans, is seen, together with Mont Cenis, and the Superga near Turin, the highest point but one in the Colli Torinesi, as well as Mont Blanc, Great St. Bernard, and Monte Rosa the most conspicuous of all, and so on.



MINARET-LIKE SPIRE SURROUNDING THE DOME, MILAN CATHEDRAL.

The hilly district between Lago Maggiore and Lago di Como forms a very extensive and imposing foreground.

To the south, the Certosa di Pavia or Carthusian monastery, the wonderful monument of the Milan dynasties, is visible, and further east the towers and domes of Pavia and the Apennines in the background.

Negotiating 177 more steps the platform of the dome is reached, and 193 more are climbed to reach the highest gallery of the tower just below the figure of the Virgin by Giuseppe Bini. Reluctantly it must be admited, the rapid survey of this world-famed edifice must come to a close, and on leaving its ancient walls there exists a very strong feeling that notwithstanding all the very many adverse and hostile criticisms of its style and character, yet there still remains a wonderful attraction in this splendid architectural composition. Immediately on leaving the cathedral one turns to a short study of other interesting architectural subjects in the Piazza del Duomo.

(To be continued.)

THE ENGLISH ROOF.*

By ARTHUR KEEN, F.R.I.B.A.

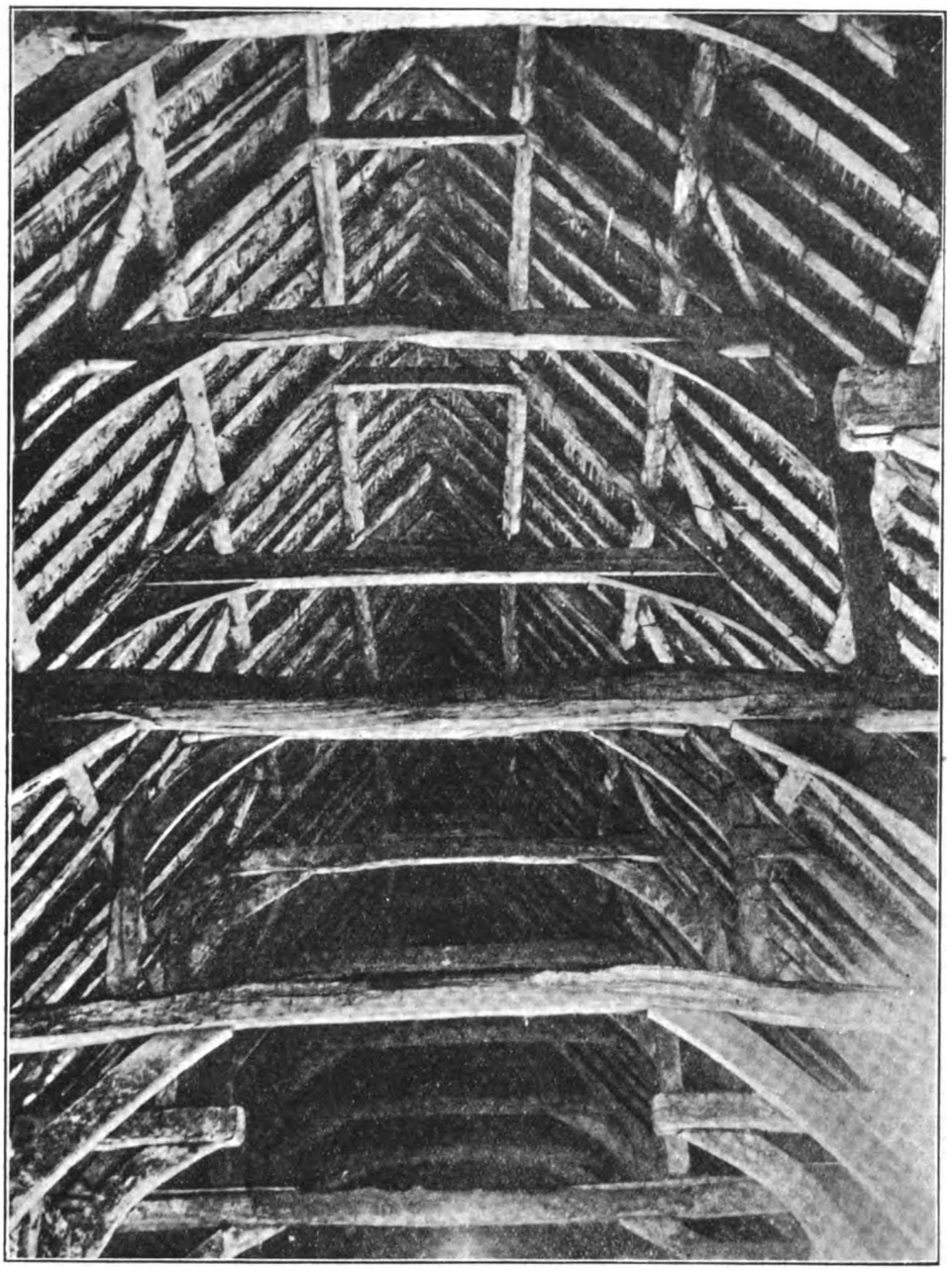
ENGLISH people are nothing if not modest and unassuming; but we probably do ourselves an injustice when we admit, as we are prone to do, that we are not an artistic people: as a matter of fact we have produced some of the finest painters that the world has known; we have an especially English art, and a very beautiful one, in water-colour painting. Architecture has flourished here exceedingly: our great Gothic churches have a beauty that the continental ones cannot rival; our great Renaissance buildings such as St. Paul's and Greenwich Hospital hold their own against all competitors, and in the craft that the Carpenters' Company had under its rule for so many generations, we have an art that is in a very particular way an English one, and one in which the English skill has found few worthy competitors. We think of our ships as having ever been mighty in battle, and they have also been marvels of constructive skill and intrinsic beauty; our timber buildings sturdy and strong after centuries of wear and weather are intensely beautiful. Where on the Continent of Europe can such things as the Guildhall at Lavenham, Ford's Hospital at Coventry, or Great Tangley Manor in Surrey be found? Our joinery work in the great country houses, in the halls of the trade guilds, in the organ cases and fittings of the old churches, is quite wonderful and intensely national in character; and the timber roofs of our mediæval churches, of the Halls of Westminster and Hampton Court, Eltham, Exeter, and York, and many another place, so unique, so national, and withal so full of power and beauty, possess such a claim on our notice that no apology is due to you for expatiating on them even in this Hall where they have often been dealt with before.

The roof has been the governing factor in the arrangement and contrivance of our buildings; and just as in the East the buildings are contrived to support and buttress the dome and its surrounding vaults, so in the North it is the roof that limits our architecture and disposes our churches in long narrow naves and aisles and transepts that can be covered by a construction formed of timber, which is only found in limited lengths. In fact, it is the most important consideration in a plan, and I suggest to people who like making sketch plans for the guidance of their architects, that they will never make a plan that is of any service until they have mastered some of the facts about roofing. The old farms and cottages, the great manor houses that are among the most precious possessions of this land, owe half their beauty to their simple straightforward roofing: the long main lines and dignified gables, and the great chimneys upstanding at regular intervals group themselves into beautiful arrangements, and offer a sky-line that is unrivalled in any other kind of buildings.

I might multiply instances indefinitely and speak of the roof from many points of view—its colour, its shape, its texture, its poetry; but this is Carpenters' Hall, and to-night I want to see what possibilities the carpenter of old times has found in the roof and how he has dealt

* A Lecture delivered at Carpenters' Hall on February 23.

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ROOF AT PASTON BARN, NORFOLK.

with it to make it worthy of its place; often, indeed, much more than worthy, for the walls and arches that bear it up seem scarcely worthy of it.

Students of building know well what skill and science have been lavished in throwing complex timber constructions over wide areas and balancing stress against stress until the whole thing becomes a marvel; many lectures could be occupied with these things: but the roof as a factor in the intrinsic beauty of a building is perhaps the finest expression of the carpenter's skill and power, and it is to this side of the matter that I want to direct your attention for a short time this evening.

Now the simplest possible form of roof is the mere lean-to: just a sloping beam laid from a high wall to a low one, and it might almost be dismissed from consideration, only it is a roof that is universally used and often receives very skilful design and workmanship.

Used in churches it enables the interior to be really well lighted by means of clerestory windows. Let me show you how I mean. Here is a section of Oakham Castle Hall where stone arches were built as in a church to divide the space and support the roof. But the effect of such a roof as this is that the side walls are low in proportion to the total height, and therefore the windows in them are small and insufficient. Here is another example: the great barn at Harmondsworth where the darkness is not of much moment. What is done in most churches to secure good light is to raise walls on the arches between the nave and aisles with windows in them, and to roof the aisles with lean-to roofs at a lower level. These lean-to roofs are generally very flat so that the wall containing the windows may not be too high. A wall on arches is not a very stable thing, and the lower it is the better for its strength and security, and, of course, the cheaper. At the same time if the aisle roof is a flat one the side walls can be of a good height and thereby the dignity of the church is much enhanced, and the aisle windows made larger than they would be in a low wall. Sometimes these roofs are of lean-to form and sometimes they are flat roofs sloping both ways. Both the forms occur at Lavenham in Suffolk.

Most of the old roofs are of very massive construction; often there may be quite twice as much material in them as a scientific carpenter might think necessary. So obviously is this the case that in most instances the old carpenters laid their rafters flat instead of on edge after the modern fashion. They realised that in the course of the centuries of a building's life all kinds of things may happen. Alterations may have to be made; water may get in and rot off half the substance of a beam; a fire may occur; thatch may be replaced by tiles or lead.

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If there is plenty of material the decayed wood can be cut out and a perfectly sound repair can easily be made; and in any case a building with a large reserve of strength will suffer neglect for a long period without collapsing. In old work it is with the roofs as it is with the walls, which are so thick that they will remain standing long after reaching the point at which a thin modern wall built of better material would fall. And what value there is in ample material from the point of view of appearance! No amount of subtle and laborious detail will compensate for the want of obvious solidity and good quality in a building. It is almost the only thing that will satisfy us by itself. One of the best-looking roofs I ever saw was at North Walsham in Norfolk, and there was not a moulding on it anywhere, but the timbers in it were enormous. It is a very interesting example, because it is so contrived that the arcades which run from end to end of the church without any cross walls are buttressed and stayed securely by the nave and aisle roofs being connected. The tie beams run right through the stonework of the arcading and are framed to upright wall posts on both sides, so that the walls are held as in a vice, and they have as a matter of fact remained quite upright for nearly 600 years. It is when we have satisfied every requirement of structural completeness that the work may be made ornamental with carving, moulding, and colour; and it is then that we see how finely these big timbers will lend themselves to decoration. They will bear such rich, full mouldings, such broad surface of carving, and the colour decoration that was often lavished on them is worthy of a lecture all to itself.

Incidentally I may point out that the moulded work of the old roofs is always wrought out of the solid wood. Carved and pierced crestings are cut in separate pieces and fixed on, always in an honest and obvious way, but the mouldings are worked on the solid. They are ornamented construction, not constructed ornament. It speaks volumes for the inherent honesty in mankind that we lose our pleasure in things when we know them to be sham. Marble and granite may be so imitated by the decorator as to deceive the eye entirely, but once we know of the deception our pleasure in the appearance that the work presents is gone; and there is no getting away from the fact of the pleasure that we derive from the obvious solidity of the work in these old roofs of ours which is made quite evident by the particular character of the moulded enrichment that is used.

There are a great many old roofs that consist, as it were, of two lean-to roofs: there is a strong beam along the centre of the span carried by cross-tie beams. The nave roof at Ludlow is one of this kind, and it is by no means a bad form of roof. Another well-known one is at St. Martin's, Leicester, and there is one at Wilbarston Church. As long as the beams and rafters do not bend all thrust on the walls is avoided.

The old carpenters loved the sweet simplicity of stiff cross beams of enormous size upholding the roof and preventing any outward pressure. Lead being a favourite covering material it follows that many roofs are practically flat and framed like a timber floor with big cross beams, smaller longitudinal ones called purlins and still smaller filling timber called rafters. They have, of course, a slight slope to the two sides; they are richly moulded, panelled, ribbed, and carved, and often have elaborately carved brackets to support the main beams.

The constructional problems connected with roofs are mainly two in number—to prevent outward thrust and to prevent the rafters from bending, and it is in dealing with these two problems that most of the scope for decorative treatment is found. In the north aisle at Thaxted is a fine example with brackets and carved angels to the alternate beams.

And there is another at Thaxted over the nave, a good solid example of moulded and mitred beams.

Some of these nearly flat roofs have the cross-beams cut out of bent trees so as to follow the slope of the roof, but it is more usual to cut the beam deeper in the centre than at the ends, as in the example at Astbury in Cheshire.

There is no getting away from the fact that in most old roofs there was a good deal of reliance placed on the resistance offered by the thick heavy walls, but at the same time every effort was made to reduce the outward pressure on them caused by the sloping roof timbers. If you make a small wooden model representing two rafters leaning against each other, you find that a slight pressure on the top presses the supports at the bottom outwards. But if you form a small triangle at the base of each rafter by putting down a short horizontal piece and a short upright one, both of them framed to the rafter, this movement is materially checked. This is what the old builders did. They put a short timber across the wall which was two feet or more thick, framed the foot of the rafter to the outer end of it, and then from the inner end of it they put a short upright piece, also framed to the rafter. At the same time they put cross pieces higher up from rafter to rafter, and other pieces across the angles, all pegged together, and this gave them what we call a trussed rafter roof; that is to say, a roof in which each pair of rafters is trussed or framed together so as to be self-supporting. A roof like this is broad and satisfying in effect and rich by reason of the constant repetition of its many parts. It is a type of roof that was used continually in the mid-Gothic period—in the fourteenth century and onward—and with endless variation in the arrangement and proportions of its parts. Generally the pitch of the roof is a steep one, so as to reduce as much as possible the thrust on the walls. In the West Country the inner struts and cross-pieces were often curved and made continuous, so as to give the roof the appearance of a vault. In many cases, and again especially in the West, the underside of these roofs, whether arched or angular, was boarded to form a ceiling divided into panels by moulded ribs with carved bosses at the corners. This was done especially at the east end of the church, and very often the panels received most beautiful colour decoration in emblems, monograms, and leaf or diaper work. In fact, our mediæval churches were decorated in colour to an extent that is difficult to realise, and in the roofs this work was done in a few colours with extraordinary resourcefulness and success. The one at Palgrave in Suffolk is a good example, and at Blythborough is another.

The trussed rafter roof not being a perfect construction, means were sought to overcome its defects. The best one used was to throw tie-beams across at intervals, stand a post on the middle of the tie-beam, and run a beam from post to post under the cross-pieces of the roof so as to uphold and bind together the whole construction. This roof at Eynesford in Kent shows the construction clearly. It is a very common arrangement in Kent and the other southern counties, where the detail work of the octagonal posts and curved braces is generally very good. These Kentish roofs again are often furnished with a boarded ceiling, so that the tie-beams and posts and braces are the only timbers exposed to view.

What we may call an open timber ceiling in a mediæval building, and an example that is interesting to Londoners, is that at Crosby Hall, pulled down in 1908 and re-erected at Chelsea. There were great crossed scissor beams to tie in the roof, and this ceiling was a practically independent construction below them. One imagines the ornamental pendants as being the lower ends of constructional posts, which is not the case, and in this respect we can only feel that the general design is unsatisfactory, although the work is so rich and beautiful. Sir John Crosby built this hall, and as he acquired the property in Bishopsgate in 1466 and died in 1475 the date of the ceiling is fixed within a year or two.

Our English carpenter was a man of remarkable initiative, and he was for ever experimenting with new forms and methods. He realised early that the form of

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ROOF AT SWAFFHAM CHURCH, NORFOLK.

the stone arch might be adopted in woodwork, and he did adopt it freely and fearlessly, taking care to throw the ultimate thrust as low down as possible, because the walls that carried his work were high and were not strengthened much by buttresses. The arched form is not merely very pleasing in itself, but the ribs of timber that form the arch, tie and bind into one solid construction the principal rafter, the wall pieces and the collar beam, if there is one, near the apex of the roof, so that they are as if cut out of one piece of wood, unbending and without thrust; but, of course, as I have pointed out before, in actual practice there is inevitably some movement due to shrinkage and twisting of the timber and so forth. Still, so sound and practical are they that they seem actually to hold and steady the high clerestory walls, full of large windows and balanced on high arcades so that they stand safe and well after five centuries of wear and strain.

A modern timber roof truss depends entirely on two great factors: one, that timber cannot stretch, and the other that, used in short lengths, it cannot bend; and it is about as perfect as anything in this imperfect world can be. The modern method was not used, as far as I know, in mediæval England, although in France it was adopted freely in forming the roofs of the cathedrals, and the wonderful timber flèches that adorn the crossing of some of the French cathedrals and tower up 120 feet or more clear above the roof were carried by timber trusses formed on the principle that we now employ. The flèche at Amiens, covered with lead and weighing an enormous amount, is fully 150 feet high, and stands above a roof that is 160 feet high off the floor, and there it has stood for four centuries. But the English carpenters seem to have disliked the appearance of tie-beams under high roofs, and to have striven always for the appearance of height and dignity that their arched construction secured.

One of the greatest inventions of the mediæval carpenter—one of his most skilful contrivances—was the hammer-beam roof. In the early, trussed rafter roofs there was, as I have pointed out, a triangle at the foot of the rafter which resisted outward pressure or spreading of the roof. In a hammer-beam roof this triangle becomes much larger; it projects boldly out from the wall and is upheld by a slanting prop or brace jutting out from a wall post below. The triangle thus supported becomes immovable, and the roof, therefore, cannot push the walls outwards. This method, once established,

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was recognised as a triumphant success, and it was used in the most fearless manner with all kinds of developments and modifications. The splendid possibilities of decorative treatment that it offered were seen at once, and full advantage taken of them; while the possibilities of interchange and variety among the many parts that composed the truss gave the opportunity for ever fresh treatment. If you go through the Norfolk churches you realise that the same carpenter must have worked in many of them, and yet the roofs are never alike. In some the arched ribs go right up to the top; in others they meet under a richly ornamented collar beam; sometimes the hammer beam is long and sometimes short. And the carved and moulded work takes endless forms—saints and kings are carved on the wall posts, angels on the ends of the beams and along the cornices, carved crestings adorned the cross beams, bosses and battlements, carved leaves in the spandrils, and splendid colour decoration made these roofs a marvel and a glory.

Very commonly the trusses were alternately of hammer beam form and arched form. The divisions of the masonry of the nave of a church being about 16 or 20 feet apart, it was necessary to put an intermediate truss between the main ones, and as the point of the window arch prevented the use of a wall post, the intermediate one was made with an arched rib instead of on the hammer-beam principle, and even when this was not the case the difference was often made, as in St. Mary's at Bury St. Edmunds, for variety and interest.

In another church at Bury St. Edmunds, St. James's, a very beautiful effect is secured by combining a small hammer beam with a full high-pitched arch, and here again a great deal of variety is secured by alternating the decoration of the hammer-beam brackets.

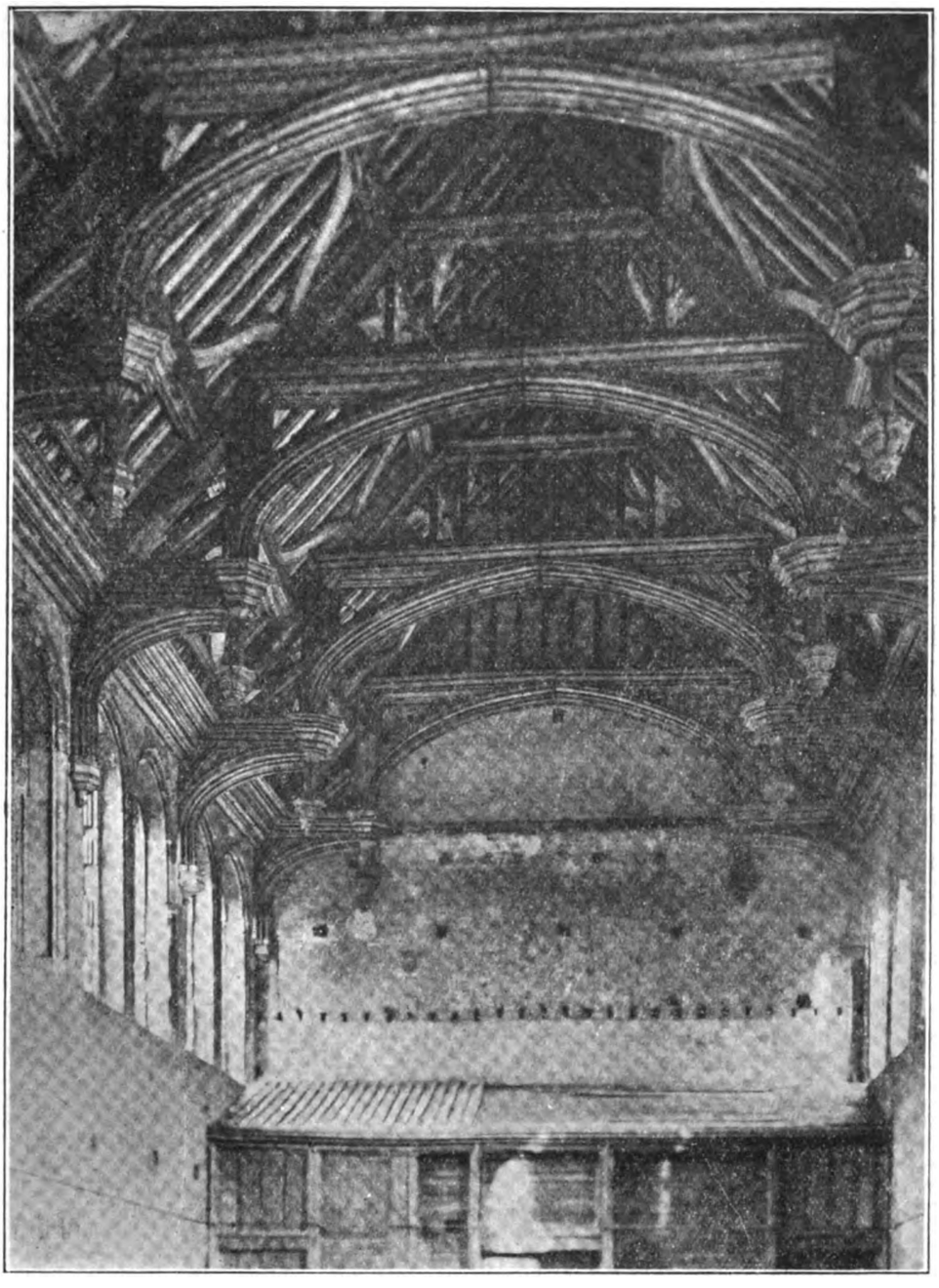
The finest construction of this class that we have, and altogether the most wonderful timber roof ever made, is the one at Westminster Hall, and a strange thing about it is that it was the first roof of its sort to be made: not merely the first with the great arched rib running up through the whole construction, but the first hammer-beam roof. The work of re-roofing Westminster Hall was begun in 1395, the materials having been got together during two years previously. John Godmeston, clerk, was put in charge of it; Hugh Herland, carpenter, was appointed controller of the work. An interesting commentary on the social conditions of the time is to be noted in the fact that Godmeston was authorised to *take* the necessary workmen that he required—masons, carpenters, and labourers—wherever found, and to arrest and imprison those who resisted. The mason was also to "arrest" carmen, horses and carts, and ships and mariners for conveying the stone. The same system is shown by the fabric rolls to have been in operation in the building of Westminster Abbey in Henry III.'s reign; and it hardly bears out the theory of enthusiastic Churchmen who believe that the great works of mediæval times were built by the monks themselves out of sheer devotion and love and without remuneration, although they have never told us how the monks learned their craft. Westminster Hall was built in the reign of William Rufus in 1097, and the original roof was in two or more spans, probably three. The walls were raised two feet in Richard II.'s reign in preparation for the present roof. There are contemporary documents that give particulars of the purchase and carriage of materials and all the arrangements for executing the work. The span between the walls is 69 feet, and the principals are 20 feet from centre to centre. The complexity of the construction, combined with the huge size of the oak timbers used in it, makes the roof an amazing production. For instance, the great collar beam of each truss is a huge log of oak 38 feet long and more than 2 feet deep, and it had to be got into position 66 feet above the floor. Everything else is on a similarly huge scale, and one stands astonished at the courage and resource showed by these old carpenters, who could not only conceive such a thing but who carried it out with such accuracy and precision of workmanship that they might almost have been handling the stuff on a bench in a workshop. The mere constructive and executive problem was stupendous, but these men looked far beyond this side of their task: they were artists and they made their work so beautiful that one does not know which to admire more, its constructional sufficiency or the beauty of its appearance. It is only too well known that the timber of this roof has suffered terribly in recent years by the ravages of a small beetle which has so destroyed the wood that drastic operations are necessary for upholding and preserving the whole structure, and they are now in hand. During the preliminary examination that preceded this work, Mr. Frank Baines, the architect who was making it, gave me the opportunity of seeing the roof from the scaffolding, and until that time I had never realised adequately the wonder of this beautiful roof: the decorative work is of the finest kind, and the great sculptured angels bearing shields at the ends of the hammer beams are some of the most perfect carved work in wood that I have ever seen. The huge arched ribs that stiffen the trusses have sometimes been spoken of as a measure of precaution beyond the requirements of scientific construction, but there is little doubt in my own mind that the roof would not now be standing had they not been there to hold the various parts in their places. The thick walls have helped them and the reinforcement now being added will keep secure one of the most wonderful things ever built, and a work in which even the English carpenter excelled himself. This particular carpenter must have been a tough old fellow, for it is recorded in 1366 that he received a pension for life in acknowledgement of his long service; seventeen years later he surrendered this pension because he was then "verging on old age" and received instead a life grant of twelve pence daily and a robe yearly: eleven years after this, in 1394, he was appointed controller of the construction of this tremendous roof: still four years later he was given a little job of constructing a new harbour at Great Yarmouth and we hear of him last in 1399, 33 years after he was pensioned for his long service. He was then still "controlling" the roof! I must show you other examples of roofs formed on the hammer beam method: this one at Swaffham in Norfolk is a little thing compared with the Westminster one, only 21 feet wide, but it is finely conceived and full of vitality and charm.

At March in Cambridgeshire is another one with a second hammer beam above the first: it is surely done for sheer pleasure in the elaboration of work, for the stiffening of the rafter might have been dealt with by simpler means. The richness of effect is wonderful; and, although tie rods have been inserted, the failure in the roof is probably not due to original defects, for there are many others of similar design that have stood well. Notably, this one at Knapton, which is over a span of 30 feet. It is of rather flat pitch, and Brandon in his book points out that most of the double hammer-beam roofs are of low pitch, and therefore it would seem that the design was deliberately adopted to prevent bending and thrust. Certainly, if all the joints and pins remain sound there is a strong tie established across the roof, and the rafter is prevented from sagging, which is all-important in a hammer-beam roof. It is worth while making a pilgrimage to Knapton to see the colour decoration of this roof. It is work such as a house-painter could do—a yellow ground enriched with green, red, and black. I am prepared to believe that it looked garish when it was new; but when I saw it several years ago, subdued by age, and modified by the light and shade of the timber work, it seemed to me most beautiful.

Close to Knapton is the great barn at Paston, which is a superb construction and really a fine thing architecturally, but it is construction pure and simple and, like the North Walsham roof, devoid of ornament. It has tie beams, hammer beams, collar beams, wind braces, angle braces, and practically all the contrivances that old carpenters depended on for sound construction.

I have spoken of the value of the arched ribs in the

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ROOF AT ELTHAM PALACE, KENT.

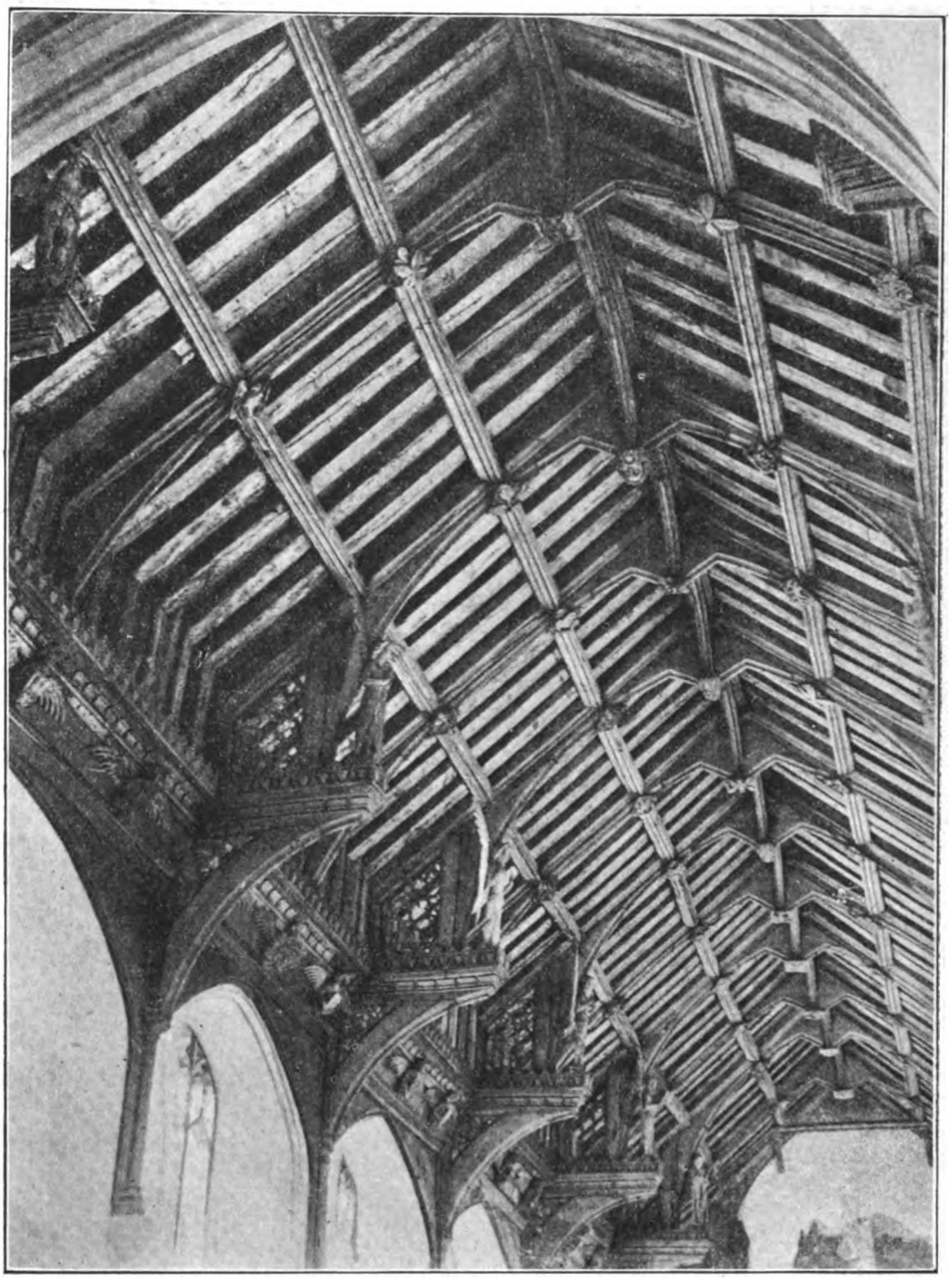
Westminster roof. They are, of course, built up of many long curved overlapping pieces of wood. Formed in this way the rib has no tendency to straighten itself and becomes very reliable. The original huge roofs of King's Cross Station were formed in this way and were both strong and good-looking, but they lacked the added grace that the skill of the old craftsmen gave to the ancient roofs: to such a roof as this one at Cadhay in Devonshire, where the arched rib is enriched with mouldings and the whole work has the touch of the artist's hand. This roof was almost certainly built after 1545, and it is interesting as showing how long the tradition of the Gothic handicraft lingered on in remote places like this one far away in the valley of the Otter.

Another roof that is interesting to dwellers in London is that at Eltham Palace, monumental in its size and the richness of its detail. It is not as sound in its design as the Westminster one, and it has failed a good deal. Neglect has played havoc with it, but it has now been taken in hand by the Office of Works and will no doubt go on for many a year. The roof dates from late in the fifteenth century.

This view of it taken from underneath gives a good idea of how the wind braces inserted to prevent the timbers from rocking or tilting out of upright may enter effectively into the design of a roof. The opening in the middle is that of the old lantern turret that formerly adorned the roof. Here is a detail of one of the moulded pendants. This roof has a span of 36 feet and the trusses are 18 feet 9 inches from centre to centre.

Another roof near London, and one of the most elaborate timber constructions in this country is the great roof of the Hall at Hampton Court. It is a hammer-beam construction and has a concealed rib binding together the hammer beam, post and collar beam, and making the whole thing very strong. This roof is interesting to us here by reason of the fact that James Nedeham, who was a member of this Company, and later was Master of it, was the King's carpenter in 1531 and 1532, and was employed on the work at Hampton Court at the time when the Hall was being built. He was succeeded in 1532 by John Russell and Wm. Clement, both members, and the former a Master of this Company, and as both were in office till after 1535, when the Hall was finished, it seems certain that this great roof is associated with the Carpenters' Company by the work of all three. It is well known that Cardinal Wolsey built the greater part of Hampton Court, and that when the King,

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ROOF AT CAWSTON CHURCH, NORFOLK

Henry VIII., fell out with him, the King took over the palace and completed it, and hence arises the connection of the King's Carpenters with the work. I think Nedeham must have carried out the roof of the Hall at Christ Church, Oxford, which is one of Wolsey's buildings: it is dated 1529 and bears a curious resemblance in some of its details to this roof at Hampton. Then again, we learn that one Thomas Pocock, who was Master of this Company in 1563 and several times after, was apprenticed in 1529 to James Nedeham, and it is fair to suppose that he also must have worked on this roof. He was an ancestor of Wm. Wilmer Pocock, who designed this Hall in which we are meeting.

Now I have only given you a rapid survey of a large subject—enough, I hope, to help you to follow it farther for yourselves—and although no one can define the point at which Gothic architecture gave place to Classic in this country because the change was so gradual and the time varied so much in different places, still, broadly speaking, the work at Hampton Court marked the step from Gothic to Classic. What we know as the English Classic Revival, which was brought to us by Inigo Jones and Wren, from Italy and France, came about a century later; but that which I should claim as the real English Renaissance in architecture—the Classic character that marked the common everyday building of the seventeenth and eighteenth centuries as distinct from the Gothic character that marked it up to the sixteenth century—was the product of the traditional skill of the craftsmen, of the actual men who handled bricks and stones and timber, and the proof of it lies in the fact that the general forms of buildings retained the old character while the detail gradually became purely Classic. And this change in detail is seen in the carvings of the Hampton Court roof. They are no longer Gothic but they were not the work of any of the Italian artists who were in England at this time, such as Torrigiano, the fellow student of Michael Angelo. They were carved for 3*s*. 4*d*. a piece by Richard Rudge, of London, and if he was an Italian he was the first and last Italian of that name. Michell Joyner and William Baldwyn did the other carvings, and their names have no uncertain sound.

The open timber roofs that came later, such as those at the Middle Temple, Lambeth Palace, and Gray's Inn, and at many of the Oxford and Cambridge colleges, were still fine constructions, even up to the time when the timbering was supplemented by the enriched plaster work that finally hid it altogether; but they lack the vitality, the force of character, as it were, of the works of the fourteenth and fifteenth centuries. Nothing will

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ever bring that back: the glorious screen and roofs, the subtle carvings and rich traceries, the wonderful colourings that these old workmen achieved as the ordinary things of their every-day work can never be done again, and all we can do is to cherish their works that remain as priceless possessions, learn from them what we can, and hand them on unimpaired to those who come after us. They mark the time when England was emerging from ignorance and suppression, and was forming and developing its great institutions. The qualities of the craftsmen of those times, their integrity, their respect for properly constituted authority, their reliance on tradition, were great factors in the social developments that took place, and these roofs in their steady growth from one type to another, in their resistance and strength, their honest truth of design and scorn of all deceit, seem to me the very type and expression of those ancestors of ours who made them and left them centuries ago for our admiration to-day.

A WREN HOUSE IN FLEET STREET.

THOSE familiar with the intricate courts forming the hinterland of Fleet Street will be interested to learn (says Mr. A. E. Richardson, F.R.I.B.A., in the "Manchester Guardian") of a rich example of Wren's architectural talent which has just been recognised. It is extraordinary that every work of this great master has not been recorded; lack of reputation cannot account for it, neither can it be implied that the public are apathetic, for the books and articles written on Wren exceed those on any other phase in English building. Moreover, it is a remarkable thing that this building, with its very interesting features, should have lain so long directly under the eye of Fleet Street and have till now escaped attention. The building in question stands on the east side of Crane Court, within a minute's walk of Temple Bar; its plan extends through to Red Lion Court, and although three centuries of alterations have left their impress on its original formation, sufficient remains to explain its old-world importance. Its appearance in Red Lion Court is characteristically secret, a high brick wall surmounted by a curious hedge of wooden uprights shutting it off forbiddingly from the curious.

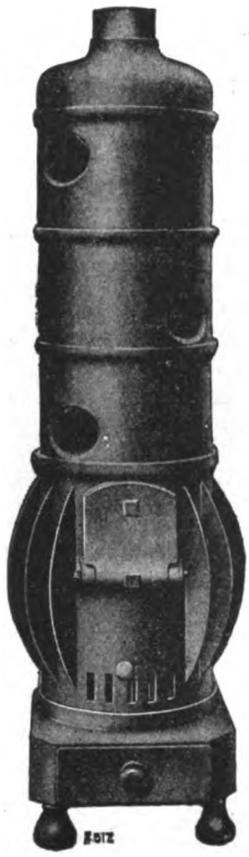
Wren's first connection with Crane Court came about in 1670, four years after the Great Fire. At that time the architect was at the beginning of his architectural career, and among other works was engaged in replanning the buildings of the Temple. Before the Great Fire the famous doctor Nicholas Barebone (son of Praise-God Barebone) lived at the head of the court. Wren was called in by Doctor Barebone to rebuild his house, as well as the others in the court. Those now standing on the east side reveal the hand of Wren, No. 5 being a particularly attractive example. In the Pennant Collection at the British Museum there is a coloured drawing, made by Tompkins in 1801, giving a view of the house Wren built for Doctor Barebone, which, in 1710, became the home of the Royal Society.

Sir Isaac Newton proposed the purchase, and the Royal Society moved into Crane Court in 1710, and there they held their meetings for seventy-two years. It must have been very grand in Crane Court then. The porter was clothed in suitable livery and provided with a staff crowned with the arms of the Society in silver, and on the nights when the meetings were held a lamp was hung out over the entrance of the court in Fleet Street to tell the world that philosophy was burning there with a clear, beneficent flame. Long after, the Scottish Corporation took over the Royal Society's buildings, which were burnt down in 1877, and the Society's new building occupies the site. It has always been assumed that the whole of Wren's work in Crane Court was destroyed in that fire, but that was not the case, and the rediscovery of the rooms in Crane Court adds considerably to our knowledge of London's architectural treasures. What the connection was between the existing houses and the Royal Society's building I am unable to say, but they were part of one design, and the decorations and embellishments in No. 5 and No. 6 Crane Court indicate clearly that the rooms were stately and rich enough for any semi-public purpose.

No. 6 Crane Court is much richer internally than its plain façade suggests. As originally built, there were three rooms and a hall on the ground floor, and no connection existed with the building of contemporary date in Red Lion Court which now forms an integral feature of the plan. On the first floor the fine rooms designed by Wren, with geometrical panels in plaster enriching the ceilings, are preserved intact, and form a most charming suite. These ceilings are the work of a master hand, the plaster work being designed and modelled with a large rich firmness, as though the designer and craftsman were experimenting with great gusto in congenial material, possibly as an exercise for a bigger enterprise. One of the ceilings has a large circular compartment with the rounded, flowered moulding about three inches in depth, and the designs in the side compartments are varied in depth according to position, being thickest further from the windows. It must have been a rich forest of lights and shadows in the firelight, very appropriate to the old tenants in their plum-coloured coats and canary waistcoats and laced ruffles, and very pleasant for philosophers to raise their eyes to as they pondered over such wild new ideas as Newton's theory of gravitation. If this gravitation was all was all that it was cracked up to be (they may have thought), these heavily moulded plaster roses and leaves ought to have fallen on their noses. But the whole ceiling is to-day almost unbroken and as fine as ever, though it looks down now on piles of old books and papers and the odds and ends of a publisher's store-room. The original heavy-sashed windows in oak without weights still exist, and the hinged props explain the absence of ropes and balances. On the back elevation two of the original leaded Stuart windows are still in position, though they have not been opened for eighty years.

Crane Court throughout its long career has been destined to house important societies. In 1754 the Society of Arts held its first meeting at the circulating library here before moving to the Strand. It was probably at this date that, owing to the increase of stylish visitors, it was decided to furbish up part of Wren's work and bring it into the mode. The old staircase, with its beautiful spiral balusters and vase-bellings, was thought inelegant. Accordingly from a point below the ground floor to the height of the second floor it was cut away, and a lighter staircase with mahogany hand-railing was introduced. At the same time light entablatures were fitted to the heavy bolection mouldings of the fireplace. Happily the ceilings were left alone. The chamber doors are seven and a half feet high, and the spaciousness of the original staircase is such that two horsemen could ride up it abreast, as the saying is. The old casement doors to the little garden court at the back are in position, and there is a small portion of black-and-white marble paving from one casement door to the paved court. Through that door the old tenants would doubtless go to sit in the paved court under their shrubs in pots in the summer evenings, and drink coffee and talk of the latest rumours in the "Utrecht Gazette." To-day you have to look twice to see the marble paving, but in summer now it is a flower garden after all, for tall weeds spring up through the jointings and purple flowers bloom for the delight of elderly compositors in the printing house. When Messrs. Taylor & Francis came here about a century ago and the building was fitted to the needs of a publisher's office, the alterations were carried out tastefully in the manner of the Regency. The architect of that time was careful in his work, for he incorporated a piece of Wren's carved wooden cornice from Crane Court to do duty as an entablature over the pilasters in the back elevation. In this building the

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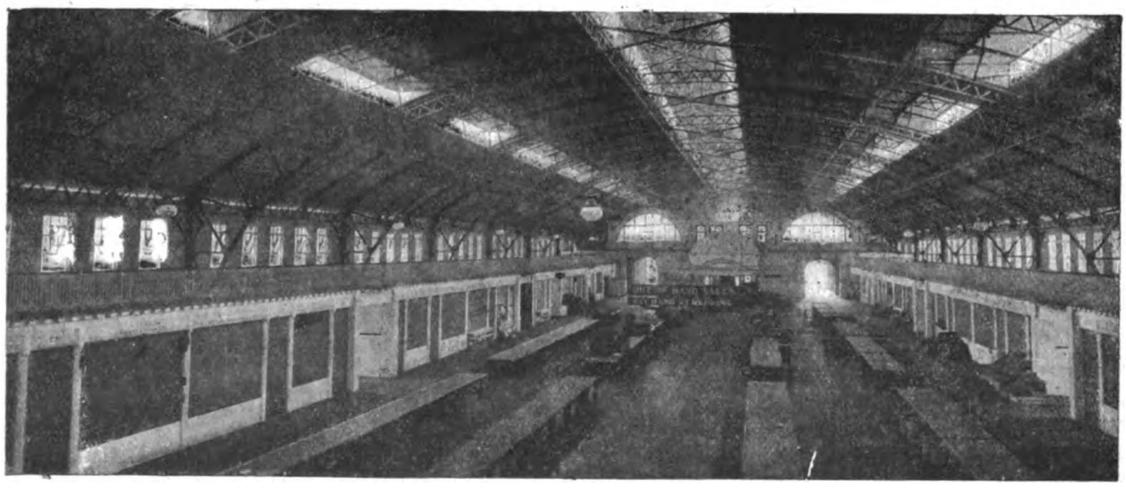
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"Gentleman's Magazine" is said to have been started in 1731, and printed there at a later date.

It is indeed astonishing that the tide of London should have swept for nearly two and a half centuries without clearing away every vestige of the seventeenth century achievement. Twenty years ago Crane Court was almost untouched, with the exception of the new Scottish Corporation building at the end. To-day nearly all the former charm of the place has departed, but it still contains behind a dingy front these very interesting and brilliant relics of the great master of English architecture, Christopher Wren.

TOWN PLANNING SCHEMES AND OPEN SPACES.*

By Lawrence W. CHUBB, Secretary of the Commons and Footpaths Preservation Society.

(Continued from last week.)

The Town Planning Act.—With the advent of the Town Planning Act, however, it was felt that a new era had arisen. At last the local authority was placed in a position to insist that land should not be developed save with some regard to civic standards, and to that end it was given valuable constraining powers.

A town-planning scheme, as defined by Section 54 (1) of the Act, may be made "as respects any land which is in course of development or appears likely to be used for building purposes, with the general object of securing proper sanitary conditions, amenity, and convenience in connection with the laying out and use of the land, and of any neighbouring lands." Sub-section 7 of the same clause enacts that the expression "land likely to be used for building purposes" shall include any land likely to be used as, or for the purposes of, providing open spaces, roads, streets, parks, pleasure or recreation grounds.

Section 55 authorises the Local Government Board to prescribe general conditions dealing, amongst other matters, with the provision of "open spaces, private and public," and "the preservation of objects of historical interest or natural beauty" (*vide* Fourth Schedule to the Act). Moreover, under Section 60 (1) of the Act "the responsible authority may, for the purpose of a town-planning scheme, purchase any land comprised in such scheme by agreement, or be authorised to purchase any such land compulsorily. . . ."

When considered in connection with the body of the Act as well as with the general principles and motives underlying town-planning schemes, it will be seen that these powers, though apparently meagre and undoubtedly limited in their scope, nevertheless afford the local authority opportunities in advance of those previously enjoyed of providing open spaces.

Proportion of Area to be Immune from Building.—No definite standard has been prescribed by Parliament or by the Local Government Board to serve as a guide in connection with the provision of parks, recreation grounds, and other land immune from building in areas to which the Town Planning Act is proposed to be applied. The absence of any such fixed standard must be ascribed not to any doubt as to the expediency of securing ample recreation grounds and breathing spaces, but rather to the confident anticipation that special directions on this point would in practice prove to be unnecessary. For the days have passed when it was thought to be undesirable to encourage the playing of games, or to foster in the people a love of Nature. It was not always so, and in the light of modern ideals and experiences it is amusingly instructive to turn to such ancient Statutes as the Archery Act, 1541, which, in order to rescue archery from "sore decay," gravely forbade the playing in public places of tennis, bowls, clash, or clovsh, shove-groat, coyting, logating, or any other unlawful games.

The high civic standards which we are justified in expecting to be set up in schemes of development under the Town Planning Act must necessarily be extended to open spaces.

What, then, ought we to look for in such schemes? First and foremost, we are entitled to expect that an effort will be made to bring about the setting apart of a definite proportion of the land included within the area of the scheme, so that it may be permanently preserved from building.

The Commons and Footpaths Preservation Society and the Metropolitan Public Gardens Association have always urged that 10 per cent is the minimum proportion to aim at, and in neighbourhoods where land has not yet reached a high building value that percentage should not be incapable of achievement.

This important point should not be allowed to drift until the land has unduly increased in value in consequence of the stimulus likely to be given to development by the town-planning scheme. On the contrary, it should be taken in hand at an early stage, so that it may be dealt with in conjunction with the laying-out of main arteries and subsidiary roads as well as of factory, shopping, and residential centres.

Types of Open Space.—The next step is to consider the types of land required for public uses, bearing again in mind probable requirements in the future rather than present day needs.

In deciding this question the following types of open space should be aimed at:—

I. PUBLIC.

(*a*) Parks and open spaces for general use, such as parks and commons.

(*b*) Smaller ornamental gardens.

(*c*) Recreation grounds for the playing of games, such as cricket, football, hockey, lawn tennis and bowls.

(*d*) Children's playgrounds with gymnasia.

(*e*) View-points.

(*f*) Riverside walks.

(*g*) Places of historic or special local interest.

(*h*) Field garden allotments.

II. PRIVATE.

(*a*) Playing fields.

(*b*) Squares and gardens.

Each of these types of open space is of distinct value and should not be overlooked.

The Value of Large Parks.—I do not agree with those who underrate the desirability of securing large parks. Small gardens and pleasure grounds in a city are invaluable and ought to be provided not only as a delight to the eye, but also for practical use. But where a well-laid-out private park is included within the ambit of a scheme local sentiment will favour its preservation, and if the owner is willing to meet the Council in a reasonable spirit, and terms can be arranged, the park should be scheduled for future acquisition. If it cannot be bought for the public, it may at least be possible to arrange that it shall be reserved as a golf course. Much less expense is incurred in preparing old meadow land for the playing of games than is involved by the conversion of ploughed fields. Moreover, the ancient trees to be found in established parks add to the amenity of the district, and in practice it will often be found cheaper and easier for the municipality to maintain a comprehensive open space rather than a series of small gardens.

Playgrounds and View-points.—In no town-planning scheme ought the special needs of the children to be forgotten.

The provision of an ample supply of playing fields is of immense importance, especially in industrial centres If, as at Bournville, they can be provided close to the factory, so much the better.

Every eminence commanding beautiful views ought to be preserved, and public access to it provided.

Waterside Open Spaces.—Then, too, walks and open spaces at the sides of running water and around

* Abstract of a Paper read before the Town Planning Institute.

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pools and lakes are specially attractive. Land adjoining streams is usually so swampy or low-lying that it should be made illegal for houses to be built upon it. Even when its level has been artificially raised by banks of evil-smelling refuse, it should not be possible for owners of such land to cover it with rows of monotonously mean and garden'ess workmen's cottages such as have been dumped down in profusion by the sides of parts of the River Wandle.

Where in the area of a town planning scheme a stream is to be found, an earnest effort should be made to reserve along each bank green belts swelling out at intervals into broad gardens and playing fields, the paths being linked together by means of rustic bridges.

Private Open Spaces.—Private open spaces are only less important than those dedicated to the public. An owner who may not be able or willing to give land to the local authority may be induced to set apart squares, small ornamental gardens and playing fields for the use of his prospective tenants or employees. A potent argument at the disposal of the Council is that Section 17 of the Finance (1909-10) Act, 1910, provides that undeveloped land duty is not to be charged upon land of this kind.

Every well-planned city should contain open spaces of these types.

How then does the Town Planning Act enable this to be done?

Concessions to Owners.—Local authorities may certainly buy compulsorily under the Act, but that is an advantage which will not be used save in exceptional cases. The strength of the Council's position is that they are able to offer landowners willing to meet the public needs in one direction concessions of great value to himself. They are no longer in the position of a suppliant compelled to accept any terms imposed by an owner actuated merely by mercenary motives.

The Council are in a position to grant an owner practical concession with regard to the width and paving of roads, to building frontages and to the nature of houses upon his property.

Betterment.—The principle of betterment, indeed, applies with peculiar force to open spaces, as was recognised in the Wimbledon Common and Putney Heath Preservation Act of 1871. This Act provided that houses situate within half a mile from any part of the common should pay a rate in proportion to their nearness to the open space. It is notorious that the value of land generally increases in the neighbourhood of properly managed open spaces.

Moreover, by exchanging parts of commons or existing open spaces, unimportant to the public but in such a position as to interfere with the favourable development of an estate, a bargain with the landowner may sometimes be effected.

(To be concluded.)

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BEDFORDSHIRE.

Bedford.—Business premises, Ampthill Road: additions and alterations, for Co-operative Society, Ltd.

No. 40 Western Street: extensions, for Messrs. W. H. Allen, Son & Co.

CUMBERLAND.

Carlisle.—Proposed thirty-six Council houses (£11,000).

DURHAM.

Hartlepool.—Smallpox pavilion. Council surveyor.

Spennymoor.—Arcadia Theatre, for Mr. Sanderson.

KENT.

Broadstairs.—"Breeze Holm," Knight's Avenue; additions, for Mr. G. A. Holmes.

Erith.—King's Theatre. Mr. F. J. Cox, architect, 2 Verulam Buildings, Gray's Inn, London.

Maidstone.—The "Fisherman's Arms" p.h., Lower Stone Street: alterations, for Messrs. Mason & Co.

Margate.—No. 147 Northdown Road: additions. Messrs. Moodey & Chrisfield, architects, Station Gates, Broadstairs.

LANCASHIRE.

Blackpool.—Hotel, Bloomfield Road, for Messrs. Catterall & Swarbrick.

House and garage, Beechfield Avenue, for Mr. J. E. Palmer.

House, Warbreck Drive, for Mr. W. Chadwick.

Two houses, Clifton Grove. Mr. J. Midgley, builder, Osborne Road, South Shore.

Two houses, Hawes Side Lane, for Mr. J. Houseman.

Four houses and shop, Layton Lane, for Mr. J. D. Williams.

House, Warley Road: additions, for Mr. J. H. Winstanley.

No. 1B Clifton Street: additions and alterations, for Mr. H. J. Parry.

Warehouse, Whitegate Drive: additions, for Messrs. J. R. Shaw & Sons.

Haslingden.—Duckworth Clough Mill: additions. Mr. W. Tattersall, architect, The Lindens.

Rochdale.—St. Mary's Church, Cheetham Street: church house.

NORTHUMBERLAND.

Wooler.—Proposed sanatorium.

SOMERSET.

Midsomer Norton.—Proposed warehouse, Rock Road, for the North Somerset Agricultural Association.

WARWICKSHIRE.

Birmingham.—Metal-working centre for twenty places, Leigh Road School.

Centre for forty places, Anglesey Street School (£900).

Domestic subjects and manual instruction Centres, &c., King's Norton (£2,100).

Proposed cookery, laundry, and housewifery Centre, Colmore Road School (£1,000).

Suggested Science Centre, Sparkhill (£1,000).

Proposed woodwork Centre for twenty places, Acock's Green (£500).

Woodworking Centres, Church Road, Yardley, and Golden Hillock Road, for forty places each (£800 each).

Extensions to Centres at Station Road, Harborne, and Riddle Barn Lane.

Coventry.—Working men's club, Eden Street.

Nine houses, St. George's Road, for G. Storer's executors.

Shop, Crow Lane: extension, for Rudge-Whitworth, Ltd.

Shop, Foleshill Road: extension, for the Standard Motor Company, Ltd.

Shop, Spon Street, for Rudge-Whitworth, Ltd.

YORKSHIRE.

Bridlington.—Workhouse Infirmary: isolation block alterations.

Edlington, New.—Proposed two hundred houses, for the Staveley Coal and Iron Company, Ltd.

Seamer.—Auction Mart: additions. Mr. C. H. Channon, F.R.I.B.A., architect, Market Street, Malton.

Sheffield.—Power Station, Neepsend: addition.

WALES.

Merthyr.—Chapel. Mr. A. E. Johnson, F.R.I.B.A., architect, Glebeland House, Glebeland Street.

SCOTLAND.

Aberdeen.—City hospital: tuberculosis ward enlargement.

Glasgow.—Germiston Ironworks, Petershill Road: additions, for Messrs. A. & J. Main & Co., Ltd.

Port Glasgow.—Works: reconstruction, for Messrs. Russell & Co.

Strachan.—House, Auchendreich: alterations. Apply Messrs. Davidson & Garden, 12 Dee Street.

Troon.—Premises, Gillies Street (£1,750), for the Hosiery Manufacturing Company (of Irvine).

IRELAND.

Loughbrickland (Co. Down).—R.C. Church: alterations. Mr. J. V. Brennan, architect, Belfast Bank Chambers, Belfast.

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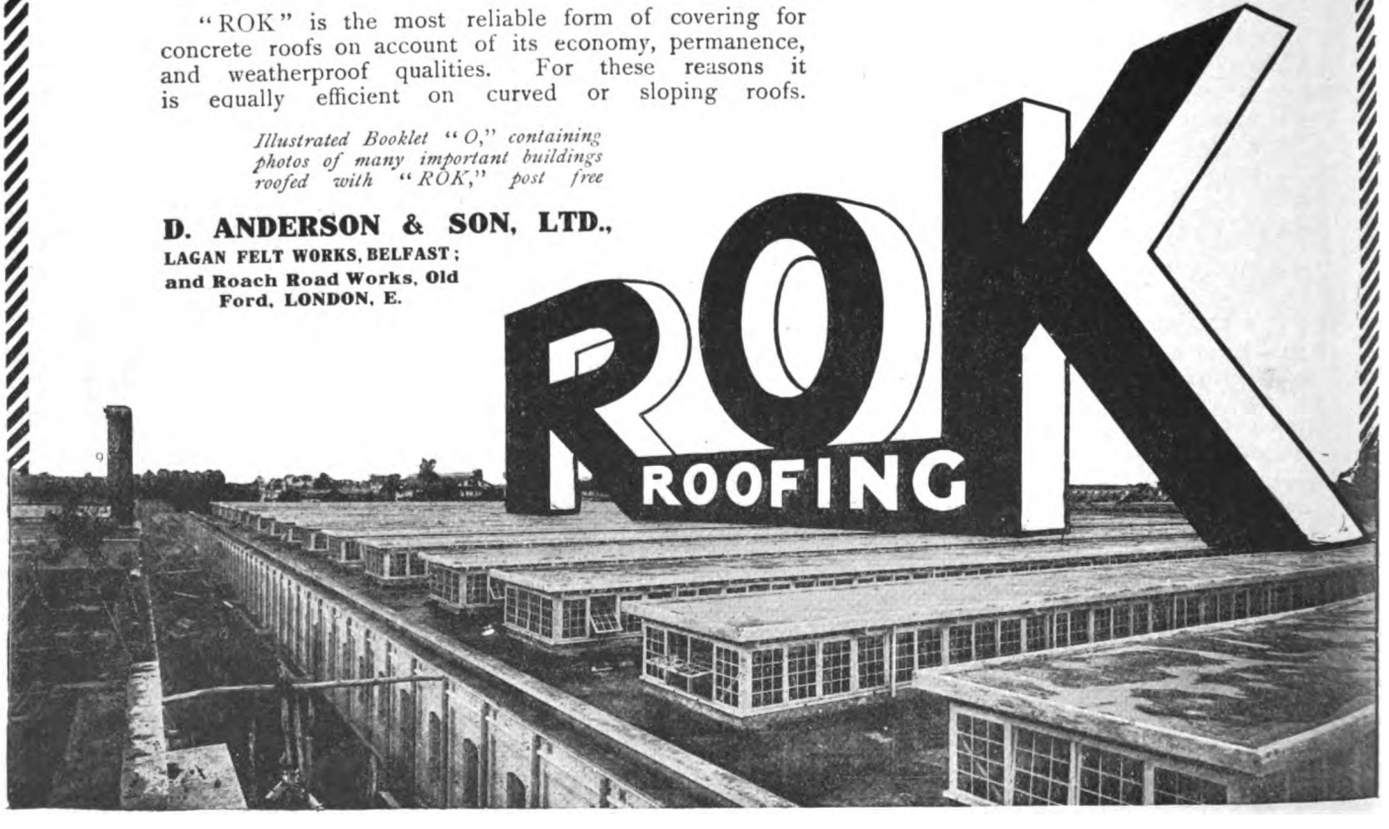
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THE ARCHITECT

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FORTHCOMING EVENTS

Friday, March 10.

Birmingham Architectural Association: Paper entitled "B.A.A. Excursion to Wells, 1915," by Mr. B. Walker, A.R.I.B.A., and Supper.

Town Planning Institute: Paper entitled "Width and Allocation of Space in Roads," by Mr. F. L. Thompson, B.Sc., A.M.I.C.E., at 92 Victoria Street, S.W., at 6 P.M.

Historical Association (London Branch): Paper entitled "London in the Time of Dr. Samuel Johnson," by Mr. G. Whale, at 5.30 P.M.

Monday, March 13.

Royal Institute of British Architects: Special General Meeting to sanction suspension of the By-laws governing the Annual Election, at 4.30 P.M.

Victoria and Albert Museum: University Extension Lecture XXI. on "English Renaissance Architecture (1500-1900)—St. Paul's Cathedral," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Wednesday, March 15.

Carpenters' Hall: Lecture entitled "Seals," by Mr. H. J. L. Massé, M.A., at 7.45 P.M.

Royal Society of Arts: Paper entitled "Forestry and the War," by Mr. E. P. Stebbing, F.L.S., F.R.G.S., at 4.30 P.M.

Thursday, March 16.

Concrete Institute: Paper entitled "Some Examples of Dangerous Structures," by Mr. W. G. Perkins, District Surveyor of Holborn, at 5.30 P.M.

Society of Architects: Extraordinary General Meeting to alter the Articles of Association, at 5.15 P.M.

British Museum: University Extension Lecture XXII. on "Early Christian Architecture (A.D. 300-900)," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Friday, March 17.

London Society: Lecture entitled "Kensington: Past and Present," by Mr. A. Moor-Radford, in the Hall of the Royal Society of Arts, at 5 P.M.

CANTEENS FOR MUNITION WORKERS.

THE novel conditions which have arisen from the national activity in the manufacture of munitions have brought in their train many new problems, amongst them the necessity for providing meals for the workers in close contiguity to the scene of their labour. Canteens are therefore required, and as these will very generally be of uniform nature, the desirability on the score of economy of typical form and arrangement is obvious. With this in view the Ministry of Munitions has caused to be prepared and published a memorandum on canteen construction and equipment, which sets forth the principles that should be observed in the planning and construction of canteens for munition workers, illustrated by plans and specifications of typical examples.

We find first a correct recommendation that the site selected should, if possible, have a pleasant, open outlook and southern aspect—we should have rather advised south-east—and should be easy of access for the workers. Also, if practicable, the canteen should be placed where water, gas, and electric mains are adjacent, as well as facilities for drainage.

Under the heading of buildings, a comparison is made between temporary and permanent construction, and it is stated that the cost varies from 25 to 40 per cent. more for a permanent than in the case of a temporary building. In our opinion this indicates that the temporary buildings proposed are more extravagantly constructed than they need be, or that an unfair comparison has been made, as, for example, between temporary buildings at present prices and permanent at pre-war figures, or between buildings completely equipped, in which, of course, the cost of the equipment is the same whether the building is permanent or temporary.

We are inclined to think that the temporary buildings as described in the plans and specifications are extravagantly constructed if by temporary use is assumed that during the time only when munition workers will be accommodated. For example, it is recommended that the floors generally should be of concrete, finished with a granolithic face, on the ground that the wear and tear of the floors is considerable, whether in the mess-rooms or in the kitchen. Such floors may be advisable on other grounds; there are pros and cons that admit of discussion, and we should prefer linoleum on concrete; but, on the grounds of economy alone, in a temporary building which is to be used only, we all hope, for a very few months as a munition workers' canteen, concrete floors finished with a granolithic face are an extravagance. There may be an idea in the minds of the Committee putting forward the memorandum of recommending the construction of canteens in such fashion that they may have a monetary value at the end of the War, but that is another story.

Although the memorandum contains plans of two types of canteen buildings, it is recognised that ready-made designs will not always fit circumstances, and that in a large number of canteen proposals it may be found that the dimensions of available sites will not admit of buildings being erected in accordance with the suggested designs accompanying the memorandum, and therefore a few remarks, which might without hyper-criticism be described as platitudes, are given on the general arrangements which experience proves to be desirable. The dining-hall should be arranged with the most convenient methods of egress and ingress and with direct approach to the serving counter, which should have barriers in front of it to prevent crowding or pushing. Adequate gangways for each diner to proceed to the dining-tables without interruption to other diners are essential. The kitchen should be situated as centrally as possible, and so on.

Under the heading of ventilation and lighting ample window space is defined as a total glass area of not less than one-tenth of the floor area. Casement windows are recommended with fanlights hinged at bottom and falling inwards with glazed cheeks or gussets. Louvre ventilators under the roof or in turrets provide ventilation for the main messroom in addition to the casements and fanlights. The kitchen should be provided with a continuous louvre ventilation. Larders should face north and have nearly half the glass omitted in the window panes and perforated zinc panels substituted—something less costly at the present price of zinc would seem desirable in a "temporary" building.

On the subject of external and internal materials the note in the memorandum commences: "The selection of materials owing to the high prices obtaining presents some difficulty at the present time," and suggests as alternatives to galvanised corrugated sheet iron ungalvanised corrugated sheets (painted) or roofing felts. In connection with these latter we encounter an objectionable feature of the memorandum: the selective recommendation of the special products of particular manufacturers where other similar products of equal quality are on the market. In the case of the roofing felts mentioned we have no fault to find with those selected if the selection

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is not regarded as exclusive of others equally good, but with some other specialities we must go farther, and record our judgment that the best have not in all cases been selected as typical. Parenthetically we are told that "light asbestos slates also provide a satisfactory, although somewhat heavier, roof covering."

For external coverings of walls there are mentioned feather-edged weather boarding (treated with creosote), ungalvanised painted sheet iron, plaster finished in cement, secured to the wood framing by expanded metal, asbestos slates, "or other materials." Internally, it is suggested, plaster and cement on expanded metal, asbestos sheets (the joint covered by a small fillet), matchboarding "or various other materials" can be used above the dado, which, it is stated, should be somewhat stronger; the specific materials instanced being three-quarter inch matchboarding, thin sheet-iron (painted), and linoleum on flat-jointed boarding. The memorandum recommends as suitable colouring distempers of a fairly light tint of straw colour, primrose, duck's-egg green, or French grey; or, as a grand suggestion for an alternative colour scheme, a dark-green dado about 5 feet high with 2-inch black line, the remainder of the walls and roof white with the roof principals stained a dark brown.

Turning now to the plans and specifications, we have designs for two canteens; type "A" is for 300 diners with future extension for another 100; type "B" for 280, or reduced for 150. Type "A" has a dining-room 84 feet by 30 feet for 250 men, and two smaller rooms for twenty clerks and twenty foremen respectively. The first point that strikes us is that if the principal aspect is south—there is no compass point on the plan but there is a verandah on this side—the larder faces east. Obviously the windows, most of which are shaded by the verandah, are insufficient for lighting the large dining-room, 50 skylights are shown on plan, and the specification prescribes 15 oz. sheet glass or Pilkington's wire plate, quarter-inch thick if near high buildings. We fancy the designer forgot the possibility of hail storms and their effect on 15 oz. sheet glass; nor do we find any provision made for blinds to the skylights, so that, in the event of an air-raid, all lights must be extinguished or so obscured that many more will be required in normal circumstances. The windows are specified to have 4-inch by 3-inch frames and mullions, sunk, weathered, and throated sills and transoms 7 by 3 inches. This is not the cheapest way of forming windows in temporary buildings. Seats for seven men are approached by a gangway 12 inches wide, open at one end only, which scarcely meets our idea of "adequate." In type "B" the kitchen is not central but at one end of the building. The specification and drawings do not agree as to the description of doors. The food cupboard is next to lavatory and w.c. Such are a few of the points which, as is not unusual in official publications, show that stereotyped plans are likely to be harmful in fostering the erroneous idea that by their use those who wish to build can dispense with the services of an architect, an idea which leads too often to both unsatisfactory building and unnecessary expenditure.

NOTES AND COMMENTS.

THE Public Health Committee of the London County Council has presented a report giving a short epitome of the first report of the Departmental Committee on Lighting in Factories and Workshops, on which we have already commented in "The Architect." The most important point of the Public Health Committee's review is that relating to the effect of the provisions of the London Building Act, 1894, on the extent of window openings. The Committee say:—

"The Departmental Committee call attention to existing requirements which are alleged to have led to some difficulty in regard to the admission of adequate daylight to factory premises. The London Building Act, 1894, limits the amount of window space in laterally lighted rooms to one half of the total wall space, and it has been represented that this unnecessarily interferes with the natural lighting of the building. The question is outside the terms of reference to the Departmental Committee, but they direct attention to it in the hope that the authorities responsible for the administration may take the point into consideration.

"It may be pointed out that by Section 54 of the Act the superintending architect has discretion to consent to any modification or relaxation of the requirements of the section with regard to the area of openings in any special cases where he may think proper, and this discretion is exercised in all applications subject to proper stability and any increased risk to spread of fire to opposite buildings being safeguarded."

The National Housing and Town Planning Council has taken up the cause of those married men, amongst whom the professional classes form a large proportion, whose income will cease when they are called up to perform the patriotic duties they have undertaken by attesting under the Derby scheme, but whose responsibilities will remain far beyond the assistance given by the regulation separation allowance for their wives and children. The Council claims, and rightly, that the treatment of these men should be just, equitable, and sympathetic.

The treatment must be just, because if it is not just the men who are called up to serve and who may have to make the "supreme sacrifice" will fight with a sense of injustice rankling in their hearts, since they will know that whilst they are serving their country their fellow-countrymen at home are mean and forgetful. The treatment must be equitable in securing that each case shall be treated on its merits, and that, whilst no difference in the payment of separation allowances are made as between the ploughman and the clerk, the dry goods packer and the architect, yet the home of each soldier shall be regarded as equally worthy of maintenance—in other words, that the "status quo" of home life shall be maintained.

It should be sympathetic because no other course of action should be permitted by a great nation in regard to its soldiers.

In a memorandum prepared by the secretary of the Council for the consideration of a special conference, the moratorium proposal is examined and some of its faults recounted. Amongst others the following criticisms are advanced:—

1. To allow a burden of debt to be accumulated and paid at the close of the war by our soldiers on the ground that we cannot afford to do otherwise will be to adopt a peculiarly mean and paltry policy. The one thing we cannot afford to do is to lessen the intensity of our men's patriotism.

2. It may be urged that if a moratorium of rent is arranged, then at the close of the war the arrears will not be paid by the tenant, but by the nation. But we have no right to deal with the question in this way. The matter should not be left in suspense, for the great mass of men will regard it as a debt which will ultimately have to be met.

3. But there is another side of the question. It must be clearly recognised that if a moratorium for rent is arranged, a burden of an unfair kind will fall upon various associations and individuals who own property.

It is, however, not enough, says the memorandum, to show that the moratorium proposal is faulty. Destructive criticism is of little value unless accompanied by constructive suggestions. The author feels bound, therefore, to explain here one or two general suggestions, which he has prepared for consideration by a special conference of the National Housing and Town Planning Council.

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First of all, he states clearly and simply the objects to be attained. These may be defined as follows:—

(*a*) That the home of the man called up to serve shall not be broken up.

(*b*) That where private means or allowances from employers are not available for the purpose, the rents of the homes of those serving as soldiers shall be, in whole or in part, paid by those whose lives and homes are defended.

If these two main points are agreed to, then it is clear that neither the proposal to terminate tenancies nor to pass a moratorium for rent will provide a solution. It is hoped, however, that a satisfactory solution may be found in the direction indicated in the following suggestions:—

1. That under the auspices of the local authority for each district (great centres like London to be treated as a whole) special committees should be set up for the purpose of preserving intact, and without accumulations of debt, the homes of those who have been, or are to be, called up for the war.

2. That each committee should administer a fund to be raised under its auspices, the fund to be increased by a contribution from the State. It would probably be better to leave half to be provided locally, and thus ensure that the work is done efficiently and economically.

3. The committee should sit in camera and deal with each case on its merits. Its work should be severely limited to the question of the preservation of the home; the question of separation allowances should be completely outside its range of operation.

4. On the recommendation of the committee, the local authority should be empowered to remit the payment of all ordinary rates in regard to the dwellings concerned.

5. The committee should be empowered to require building societies to postpone the repayment of those parts of their charges which relate to redemption of principal sums, but not interest. The best societies are already doing this voluntarily.

6. In the case of large houses of professional men, the committee should be empowered to act as the local authorities on the East Coast resorts have done—viz., arrive at an agreement with the owners to reduce the rent for the period of the war.

7. In those cases in which employers are making substantial profits as a result of the war, and, in which the rest of the staff are working longer hours to make up for the absence of others, the committee should be empowered to require these employers to bear the burden of their employees' rent during their absence.

8. That part of the fund administered by the committee which is raised locally should be raised either by (*a*) voluntary contributions, or (*b*) a tax on the amusements of the district, or (*c*) by a local or county rate levied on all ratepayers.

For many reasons (*c*) would be the most valuable way. "Let all pay for a service rendered to all," would be the best answer to those who cry out against increased rates.

9. It should be made clear that applications from those who have private means (or whose family relations are wealthy enough to render aid unnecessary) will be discouraged.

10. All payments should be made direct to those to whom rental payments are due—this in order to avoid the diversion of money to purposes other than those for which it is intended.

Manchester has set a good example which will no doubt be widely followed throughout the country, inasmuch as the General Purposes Committee of the Manchester Corporation has approved a recommendation of the Parliamentary Sub-Committee to call the attention of all municipal corporations in England and Wales to the following standing orders which have been adopted by the City Council:—"No contract shall be entered into with any person of German or Austrian nationality. No contract shall be entered into with any firm or company whose subscribed capital (whether by way of shares or otherwise) is held or controlled to the extent of one-third or upwards by persons of German or Austrian nationality."

The Public Works Committee of the Birmingham City Council have recently had under consideration the report prepared by their delegates, Councillors Talbot and Riley, to the Road Congress, which was held in London last year. This report stated it was evident from the discussion which took place that road construction and maintenance at the present time were causing constant anxiety to local authorities throughout the kingdom. Moreover, the process of evolution in modern traffic which has rapidly brought both fast and heavy traffic from the railway to the highway, has found local authorities in a large measure unprepared, and has led to very large sums being exacted from the ratepayers to place the roads of their respective localities in some sort of condition to receive this new traffic. It was generally felt that as the through roadways of a country have such an important bearing upon the prosperity of a commercial nation like our own, the obligation of keeping these through roads up to a good standard should be a national rather than a local matter, and steps are being taken to lay these views of the conference before the Government.

In a lecture delivered by Mr. Harold Brakspear, F.S.A., on "The Excavation of the Episcopal Palace at Sonning," which has been carried out at the cost of the President of the Berkshire Archæological Society, Mr. Charles E. Keyser, the lecturer began by saying that a bishop's house, or palace as it was now usually called, was for the two-fold purpose of housing the bishop and his servants and accommodating his guests on a lavish scale. Most bishops had a house on each of their chief manors, and there were remains of a number of those buildings in various parts of the country. A bishop's house of the Middle Ages differed but little from those of his lay brethren. It consisted of a great hall, with pantry, buttery, and kitchens, a great chamber for the use of guests, a private set of chambers for the bishop and his household, with a chapel, all being defended, and entered by a strong gatehouse. The Manor of Sonning belonged to the Church from the earliest times, and for many years the bishops of the divided dioceses of Winchester resided there. At Domesday it was held by Osmund, Bishop of Sarum. Though the Sonning site must have been a bishop's house in those early times, it was questionable if it was on the site of the later building, or nearer the parish church. Certain it was that nothing remained in the latter palace earlier than the thirteenth century except a few twelfth-century stones used as building material. The thirteenth-century house was placed parallel to and on the steep southern bank of the Thames, and, though altered by later works, was traceable in the northern range of the later building. The house was raised upon a sub-vault, and closely resembled the palace built at New Sarum by Bishop Richard Poor about the same time. In 1336 Bishop Robert Wyvill obtained a licence to crenellate the manor house of Sonning, together with the other houses of Sarum, Bishop Woodford, Sherbourne, Chardstock, Potterne, Cannings, Ramsbury, and Fleet Street, "in suburbis." That inclusive licence was confirmed to his successor, Ralph, by King Richard in the first year of his reign, who suggested that none of the works had by then been completed. Though all those buildings would not have been undertaken at the same time, even by so rich a prelate as the Bishop of Salisbury, the house at Sonning was most certainly very much enlarged about that time, although nothing remained of any defensive nature beyond the ditch. A second great re-building was undertaken in the middle of the fifteenth century, and embraced a new hall, with

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its entrance porch, oriel, and staircase, which must have been a magnificent piece of work. The date of that building, and its details, so closely resembled those of St. George's Chapel, Windsor, that it was not unreasonable to ascribe the work to Bishop Richard Beauchamp, who was made "surveyor of the King's works at Windsor" in 1473. He was also said to have built the great hall at the palace of Salisbury. The private portions of the bishop's house at Sonning were altered from time to time, and the great gatehouse was rebuilt in Henry VII.'s reign, with the walls surrounding the forecourt, and, possibly, the "water-gate" on the north. Leland visited Sonning in 1541, when he said, "There yet remaineth a faire olde house ther, of stone even, by the Tamise ripe, belonging to the Bishop of Saresburyi, and therby is a fair parke." In 1574 the Manor of Sonning and Eye was given to the Crown by Bishop Edmund Gheast, in exchange for money and its manors in the diocese of Salisbury. It seemed ultimately to have been allowed to fall into decay, and a new house built to the south-west with the old materials. This, in its turn, had disappeared. It was entirely due to the energy and generosity of Mr. Keyser that the excavations were undertaken, and the plan, so far as it went, of this interesting house had been revealed. Much had been accomplished, but much more remained to be done, as nothing had been found of brew-house, bake-house, stables, or barn, or of the "curtain wall" which must have existed.

Much misconception exists as to the meaning and influence of science, and one of the main purposes of "Discovery: or the Spirit and Service of Science," by Professor R. A. Gregory, to be published by Messrs. Macmillan, is to promote a more sympathetic attitude towards those who are engaged in the pursuit of scientific truth. When the purpose of scientific teaching is materialistic domination, without regard to the spiritual needs of humanity, it is a social danger and may become an excuse for learned barbarity; as, indeed, it has become in the hands of our German enemies. But scientific research is rarely inspired by these motives, or justly represented by acts which should shame a civilised nation. It would be just as illogical to suggest that the war and its weapons of destruction were due to Christian teaching as it is to suppose that science is responsible for them. Science is concerned with the discovery of new forces, new phenomena, new relationships; and men may use them for good or ill, to ease pain and suffering, or to maim and destroy. The book which Professor Gregory has just completed will deal with all these ethical matters as well as with many others, such as the conquest of disease, scientific methods and motives, and industrial applications of results achieved by them. It should make a wide appeal at the present time.

ILLUSTRATIONS.

ETCHINGS BY MR. AXEL H. HAIG.

We have much pleasure in reproducing to a considerably reduced scale two etchings by Mr. Axel H. Haig of architecture in Toledo and Arles, which were shown in the thirty-fourth annual exhibition of the Royal Society of Painter-Etchers and Engravers, of which a review appeared in "The Architect" of February 18.

FRANCIS HOLLAND SCHOOL, PARK ROAD, N.W.

We illustrate this building by Mr. H. T. Hare, F.R.I.B.A., as an excellent example of modern school architecture.

GLENHEAD, LENZIE.

This house, prior to the remodelling scheme carried out, was of a very ordinary type, and it was the owner's idea to transform it into a representative example of Scottish domestic work with crow-step gables and other characteristic features.

Externally, as will be gathered from the illustration, the walls have been rough-cast, with lower front facings in stone, and stone fronts to oriels. The roofs are tiled with Highland slates. The raised entrance is of stone, with carved enrichment over doorcase, taking the form of a central square panel filled in with heraldic ornament, and the door is of oak.

As regards the internal work, the walls of the hall are panelled, with upper surface painted cream to harmonise with the ceiling treatment. The wide staircase is of cypress wood, stained in oak. For the floors oak and walnut parquetry have been used. A feature of the hall is the carved mantelpiece in Bath stone, laid with Dutch tiles.

The work was carried out from the designs and under the direction of Mr. William B. Whitie, F.R.I.B.A., by Messrs. George Ferguson and Sons, Glasgow. The sub-contractors employed, all Glasgow firms, were as follows:—Mr. Moses Barlas, for masonry; Messrs. William Anderson, Ltd., plumbing; Messrs. Melville, Dundas and Whitson, 93 West George Street, fireproof flooring; Messrs. William Tonner and Sons, plasterwork; Messrs. R. Henderson and Sons, painting; Messrs. Oscar Paterson, Ltd., leaded-glass work; Messrs. William Kemp and Co. supplied the grates; Mr. Kellock Brown was responsible for the carving and Bath stone mantelpieces.

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—X.

By Charles T. Ruthen, Licentiate R.I.B.A., M.S.A.

To the south (of the Piazza del Duomo, Milan) stands the Palazzo Reale, erected in 1788 by Piermarini on the site originally occupied by the Palazzo di Corte, the first mansion of the Visconti and of the house of Sforza. A handsome mansion containing several very magnificent saloons and adorned with a number of beautiful frescoes.

On the north side of this square rises the modern Galleria Vittorio Emanuele, an arcade-like structure connecting the famous square with the Piazza della Scala. This structure was erected in 1865-67 by Gius. Mengoni, and cost about £320,000.

It is considered the finest structure of its kind in Europe, and is in the form of a Latin cross with an octagonal centre surmounted by a glass cupola at a height of 157 feet; it is 213 yards long, 16 yards wide, and 85 feet high.

To the east, in the Piazza del Campo Santo, which was formerly the cathedral cemetery, stands the Archiepiscopal Palace, erected in 1494 in the early-Renaissance style, but altered considerably in the sixteenth century by Tibaldi and others.

Passing through the Galleria Vittorio Emanuele, with its well-dressed high-class shops and its pavements crowded by shoppers and visitors of all kinds, the Piazza della Scala is entered with the famous monument of that great Italian master, Leonardo da Vinci, by Magni, round about the pedestal of which are Marco d'Oggiono, Cesare da Sesto, Salaino, and Beltraffio, four of the pupils of Leonardo.

At the north-west angle of this square commences the Via Giuseppe Verdi, one of the principal streets in the city, in traversing which one passes numerous buildings of note and reaches the Palazzo di Brera. This building was started in 1615 as a Jesuit college, but was not completed until the following century.

Since 1776 it has been the seat of the Accademia di Belle Arti, and is now called the Palazzo di Scienze, Lettere ed Arti. The very fine court, with a double

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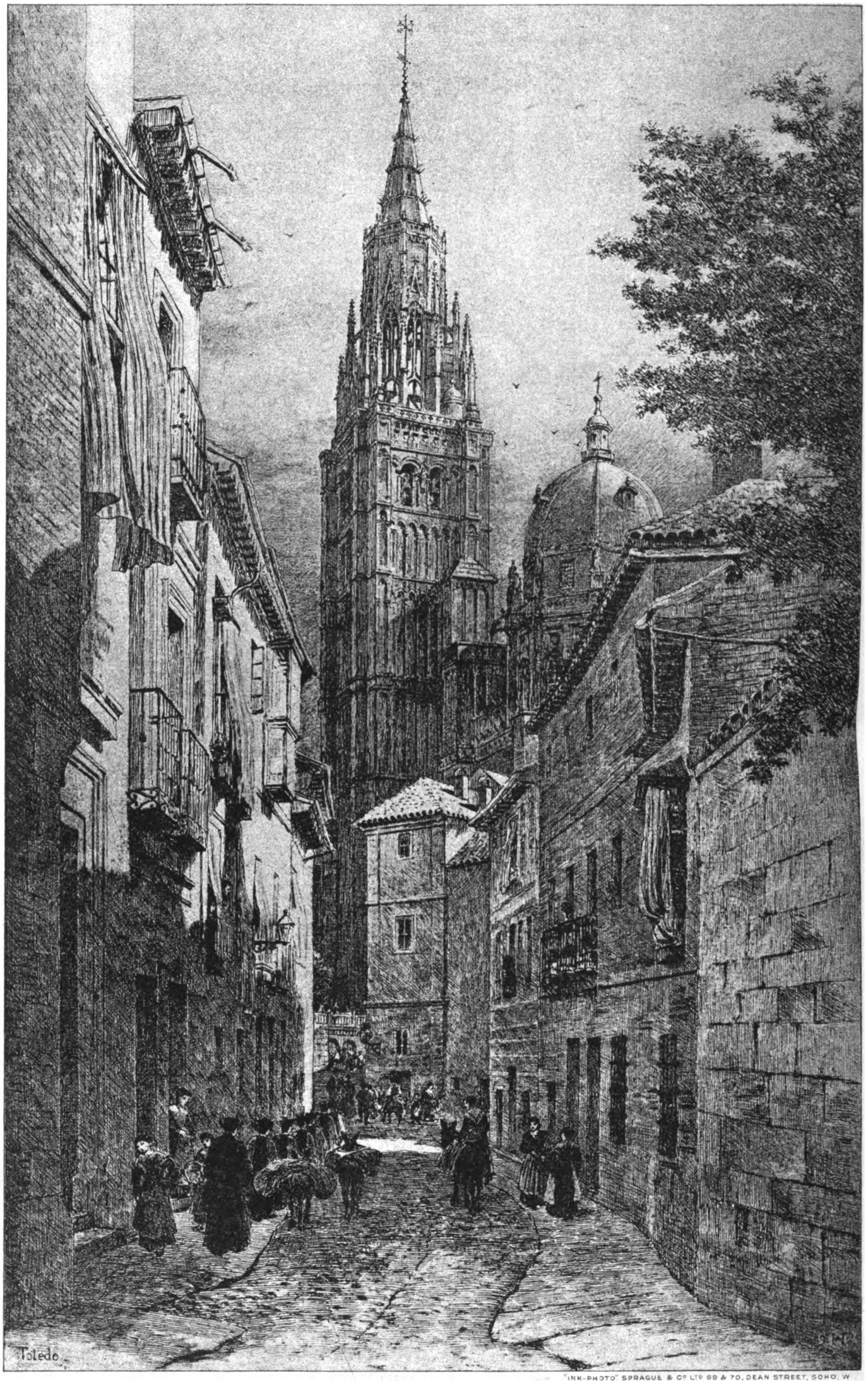
FRANCIS HOLLAND SCHOOL, PARK ROAD, N.W.

Mr. HENRY T. HARE, F.R.I.B.A., Architect.

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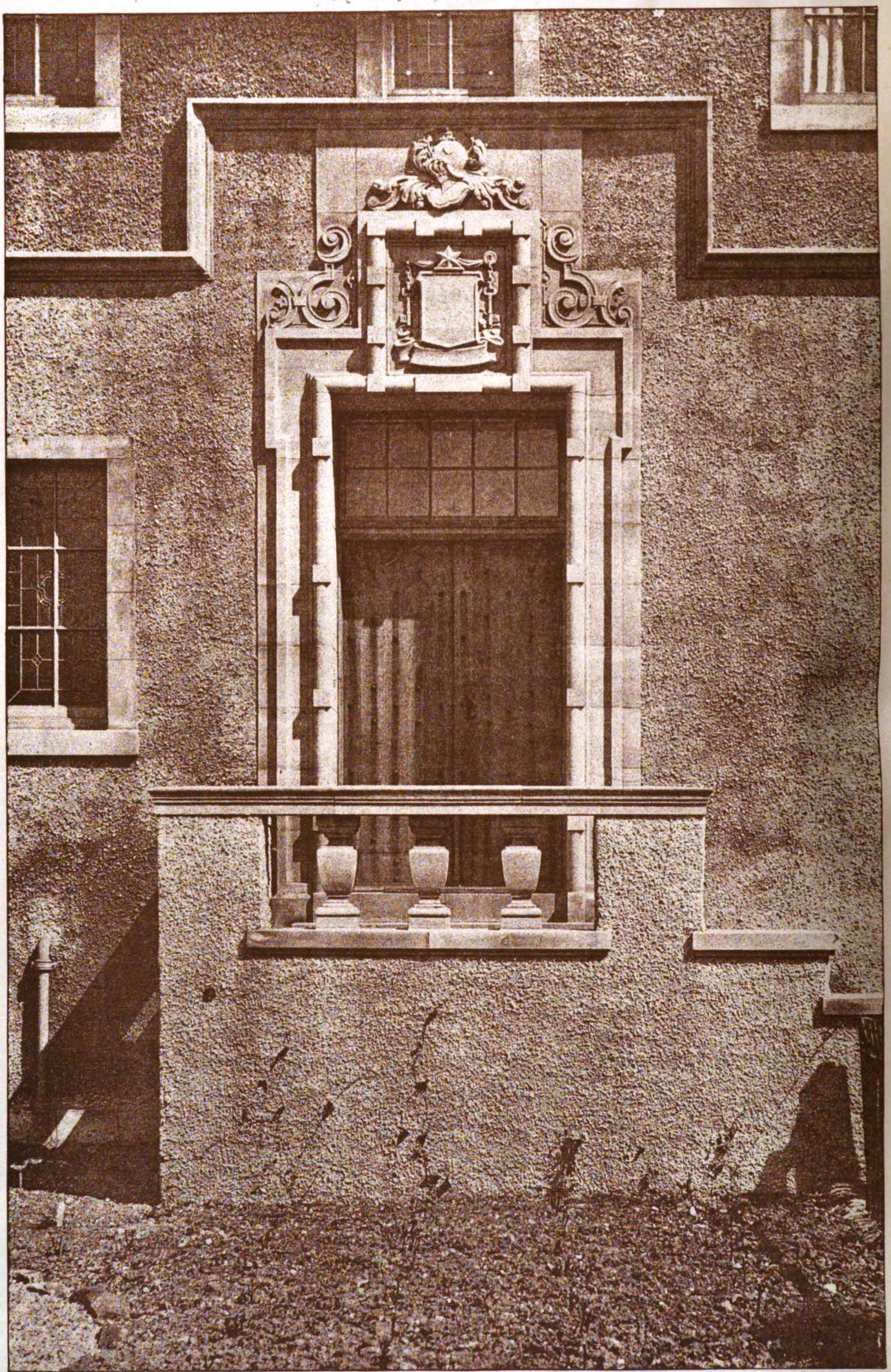
A STREET IN TOLEDO WITH THE CATHEDRAL.

From an Etching by Mr. AXEL H. HAIG.

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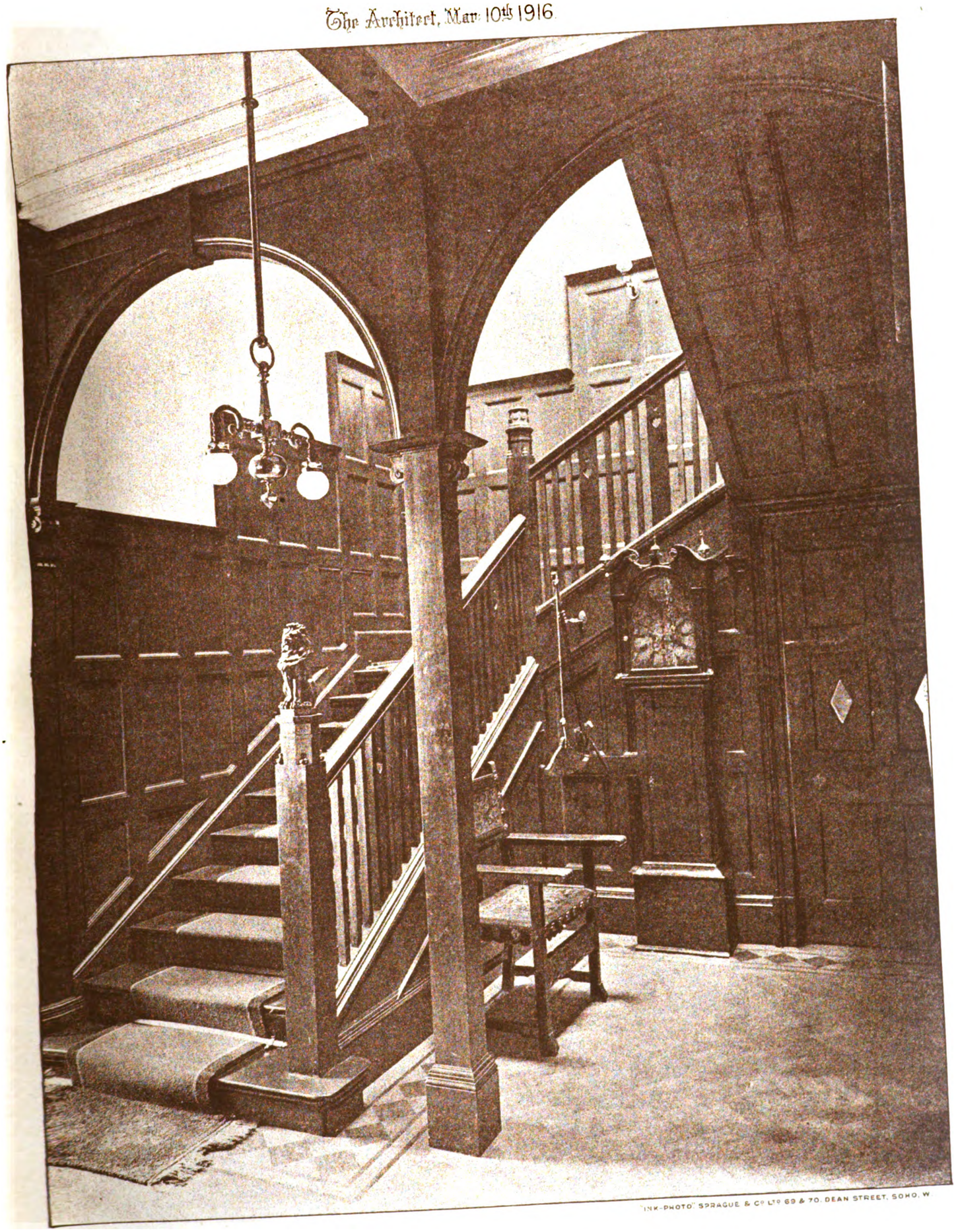
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"GLENHEAD," LENZIE: ENTRANCE DOORWAY.



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"GLENHEAD," LENZIE.

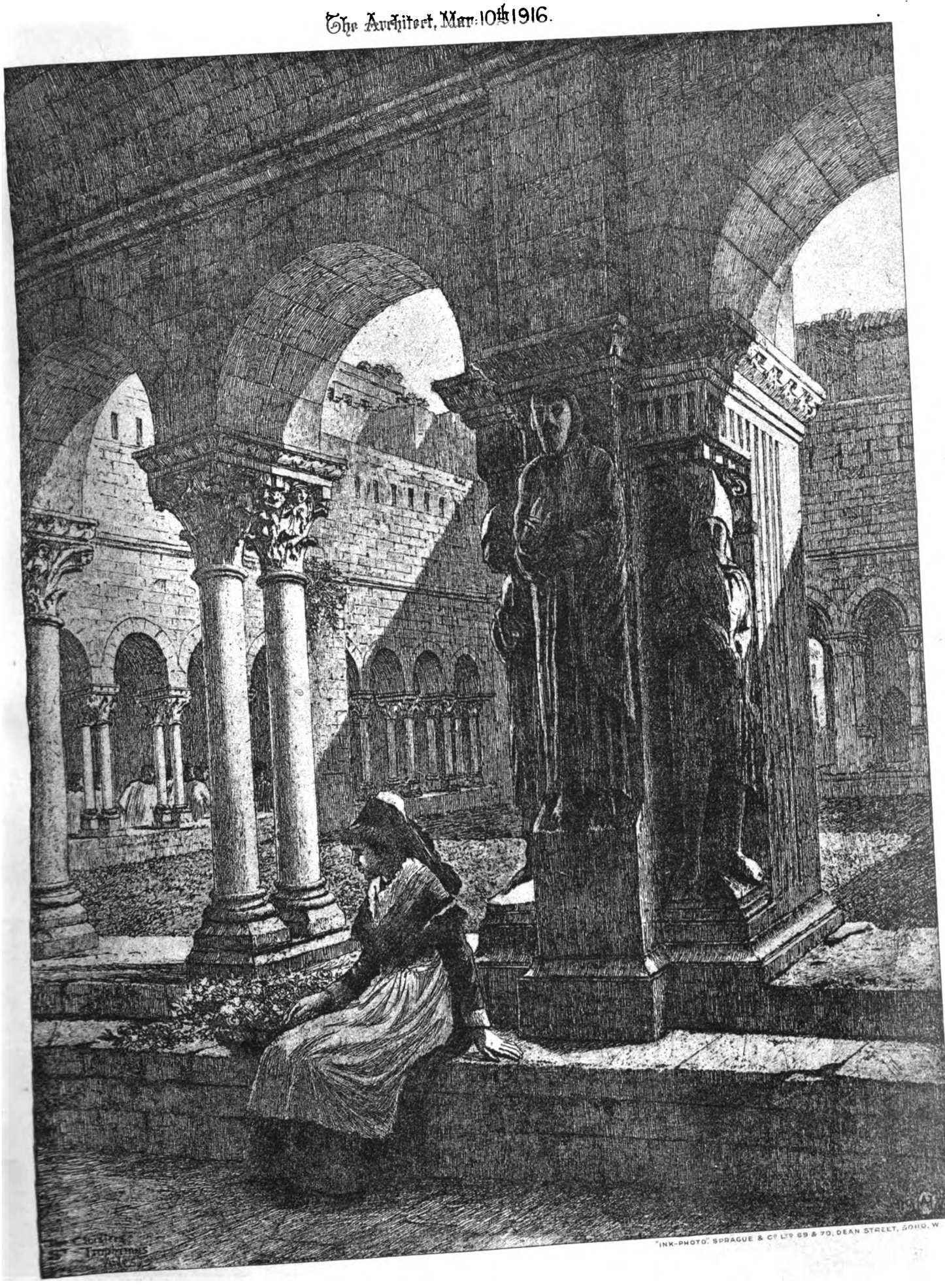
Mr. WILLIAM B. WHITIE, F.R.I.B.A., Architect.

(Royal Scottish Academy, 1915)

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"INK-PHOTO" SPRAGUE & Co Ltd 69 & 70, DEAN STREET, SOHO, W.

THE CLOISTERS, ST. TROPHIME, ARLES.

From an Etching by Mr. AXEL H. HAIG.

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"GLENHEAD," LENZIE: VIEW FROM SOUTH WEST.

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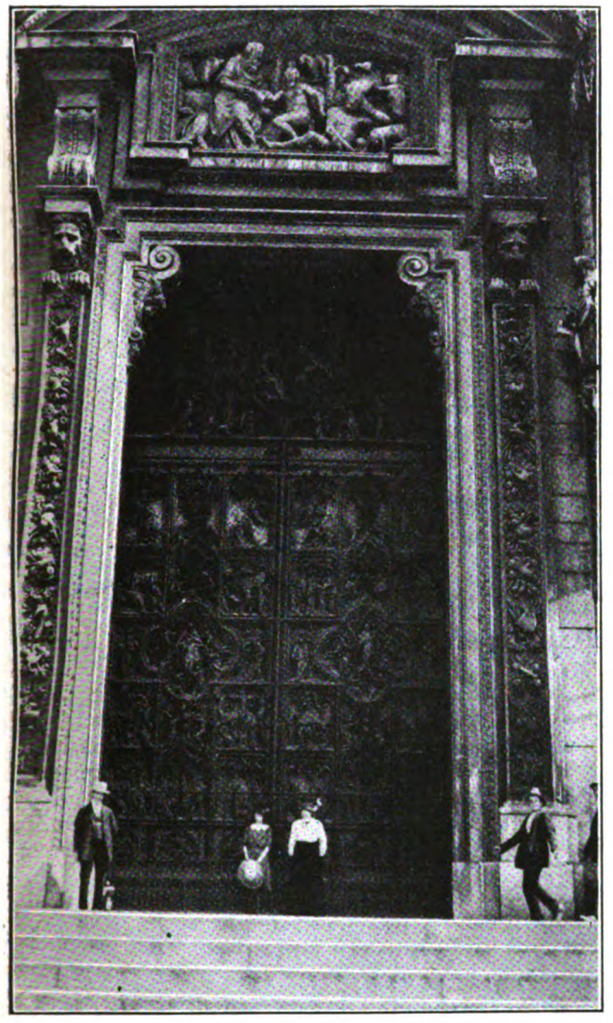
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flight of steps, contains a bronze statue of Napoleon I. by Canova.

The picture gallery contains very many of the finest works of the great Italian masters.

Passing from the Piazza del Duomo into the Piazza dei Mercanti, in the olden days provided with five gates and being the central point of the mediæval city, one comes into view of the Palazzo della Ragione, a large



MILAN CATHEDRAL.—MAIN ENTRANCE.

hall consisting partly of Roman remains and erected in the thirteenth century. On the north side of this square in the Palazzo dei Giureconsulti, erected in the sixteenth century, with an old thirteenth-century tower, and on the south side the Gothic Loggia degli Osii, a structure of black and white marbles, erected in the fourteenth century. This latter building is now the Museo Commerciale, and next the Palazzo delle Scuole Palatine, now the Chamber of Commerce.

A building of more than ordinary interest and having a wonderful history is the Castello or Castello Sforzesco, the Castle of Milan. It is particularly of brickwork, rectangular in shape with four corner towers and a curtain-wall.

It has been extensively rebuilt and restored since its earlier days, and much of the important portions are now quite new.

The old Castello was erected in 1368, and in 1447 it was destroyed by the Ambrosian Republic, which after the extinction of the Visconti family was known as the Republica di Sant' Ambrogio, under which Milan was ruled; but a few years later Francesco Sforza, the general-in-chief, made himself Duke and rebuilt the Castello, which was then beautified by Bramante, Leonardo da Vinci, and other Italian masters.

From 1499, the year of the French invasion, this castle has on many occasions been the centre of fierce struggles for the possession of Lombardy.

This structure is now used as a school of art, and contains the municipal art collections.

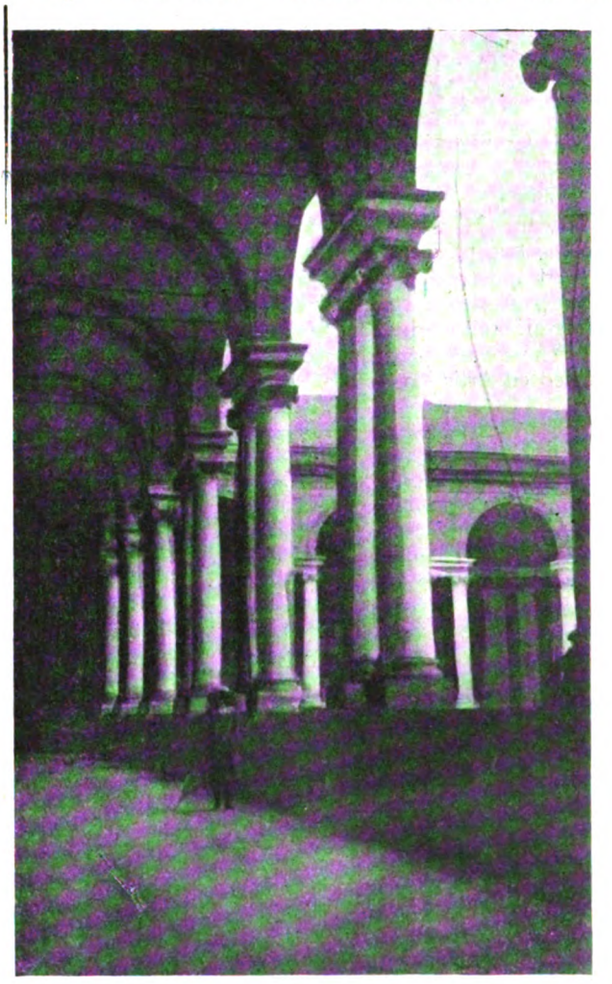
The principal entrance (shown in the illustration) is by the Torre Umberto Primo, a fine tower-gateway built in 1901-5, and is 230 feet high, standing in the centre of the principal façade.

The old tower which stood upon this site, of which the existing tower is a copy, was destroyed in 1521 by an explosion of gunpowder.

The two round towers, which are 102 feet high at the corners, are named the Torrione dei Carmini and the Torrione Santo Spirito, on the left and right of the main entrance façade, were restored in 1894 and again ten years later, and are now utilised as reservoirs for water for drinking purposes. An apology is necessary for the defects in the photograph from which the illustration showing one of these round towers was taken, this tower appears to be leaning; but it is not so. This particular photograph was taken from within the Piazza d'Armi.

The principal and two side entrances open into the Piazza d'Armi, a very large court, tastefully laid out with large flower-beds.

This highly interesting and picturesque block of buildings is well worth a visit, and the traveller will find



COURT (BY RICCHINI) OF THE PALAZZO DI BRERA, MILAN.

much worthy of study in the rear portion at the back of the Piazza before-mentioned.

Here is the Rocchetta with its façade devoid of windows, built upon the foundations of the original Visconti Castle, by Francesco, of Sforza, together with a new curtain-wall and two square towers, the Torre di Bona di Savoia and the Torre del Tesoro or Castellana. The former was erected in 1477 and is 140 feet high.

From the Piazza Castello a bridge over the castle

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moat is crossed, known as the Ponticella di Lodovico il Moro, with a fine loggia reconstructed by Bramante after 1490. Passing under the Torre Umberto Primo before-named and entering the Piazza d'Armi the Corte Ducale stands upon the right hand.

This fine structure was the new palace of the Sforzas and has restored Gothic windows and a curtain-wall.

A passage-way between the Rocchetta and the Corte Ducale leads to the Parco, now a public open space of



GALLERIA VITTORIO EMANUELE, MILAN.

116 acres in extent, but formerly the grounds attached to the two palaces.

At the north-west angle of the Corte Ducale stands the Loggetta, a beautiful Renaissance erection, by B. Ferrini, built in the time of Galeazzo Maria.

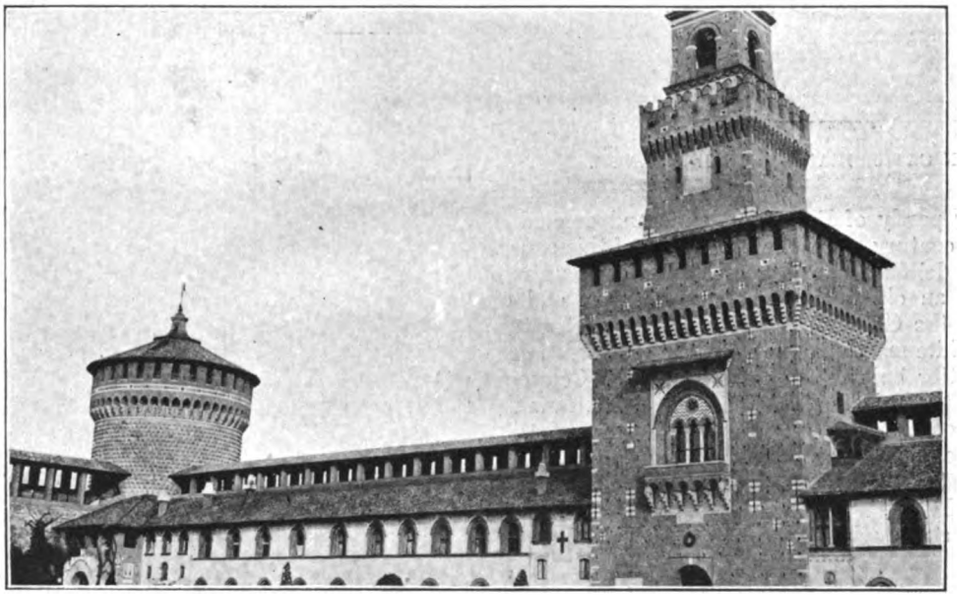
These buildings now accommodate the Museo Archeologico ed Artistico.

tiles, &c., as well as Romanesque fragments from the churches of Sant' Ambrogio and San Celso (twelfth century), and other very interesting relics.

There is also a gallery of old masters, containing some of the finest of their works, and in other portions of this vast group of buildings (Galleria d'Arte Moderna) are galleries of the works of modern masters and collections of coins and medals.

Beyond the Parco before-mentioned stands the arena erected in 1807 and capable of accommodating 30,000 people, and to the north-west of the park stands the Arco della Pace, a very noble white marble triumphal arch, begun in 1806 for Foro Bonaparte, and completed in 1838 under the Austrians.

The majority of the sculptures are by Pompeo Marchesi. From the Castello and the vicinity thereof a



MILAN CASTLE.—VIEW FROM THE PIAZZA D'ARMI.

There are many objects of great interest to be seen within this fabric in the few hours' saunter through its various departments, including skeletons of the later Stone Age, Celtic antiquities, prehistoric objects, and Etruscan and Greek relics of antiquity, many fragments of frescoes, and architectural particles of ancient churches, &c., terra cottas of the twelfth to sixteenth centuries, majolica, ivory carvings, ironwork, bronzes, jewellery, Italian furniture sixteenth to seventeenth centuries, lace, tex-

journey to the western quarters of the city provides much of great and absorbing interest.

Leading from the Piazza dei Mercanti, which lies to the west of the Piazza del Duomo, through the Via Cesare Cantù, there is situate the Piazza della Rosa, a small square on the south side of which stands the famous Biblioteca Ambrosiana, originally erected in 1603-9.

This building contains the Museo Settala, the oldest museum in the city, and on the ground floor the library

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contains upwards of a quarter of a million books and 15,000 MSS. In the upper floors there is a magnificent picture gallery founded by Card. Borromeo in 1618.

Close by is the Piazza San Sepolcro, in which rises the Romanesque Church of San Sepolcro, dating from the eleventh-twelfth centuries, one of the churches named before as having survived the destruction of 1162.

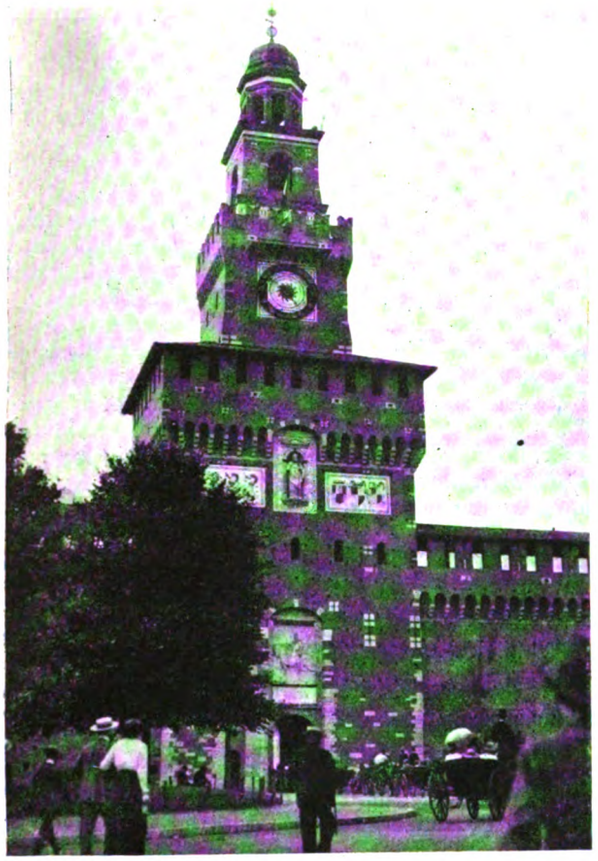
This church has some quaint barrel-vaulting and two campaniles, and is very interesting, although it has, in its interior, been much modernised.

In the Piazza San Borromeo near by stands a monument to San Carlo Borromeo, and also the old Palazzo Borromeo, with its late-Gothic side court containing three fine frescoes, card-players, players at ball, and a rustic dance.

There is, again, on the first floor of this interesting building a picture gallery containing many famous and valuable works of art.

The very quaint and small church of San Maurizio, in the Corso Magenta, is worth a visit. It was erected in 1503-19 by Dolcebuono, a pupil of Bramante, and contains a number of fine frescoes by Luini.

The abbey church of Santa Maria delle Grazie again stands in the same Corso Magenta, and is a brick edifice of extra special interest



MILAN CASTLE.—THE TORRE UMBERTO PRIMO, FROM THE PIAZZA CASTELLO, MILAN.

A Gothic example of a very late pointed period attributed to 1470-80, the main portal is in the early-Renaissance style. The choir and sixteen-sided ugly dome, an object of much interest, were designed by Bramante (1492-97), but, it is recorded, were not completed until the sixteenth century.

The ornate external ornamentation of the lower part of the building, designed by Bramante, is amongst the finest creations of the early Renaissance.

The interior, with its little chapels, is gorgeous, and contains many delightfully interesting parts.

There stands to the north the Dominican Monastery, which since 1796 has been used as a barracks, and in the north-west angle of the Piazza Santa Maria is situate the entrance doorway, lettered "Cenacolo Vinciano," to the refectory. This small building contains the celebrated masterpiece of that great artist Leonardo da Vinci, "The Last Supper."



THE ARCO DELLA PACE, MILAN.

This wonderful and world-famed picture is painted upon the wall in tempera, and was probably executed before 1499. It is a most marvellous work and is certainly worth a special visit to Milan to inspect. There are a number of other famous works within the walls of this little building, including contemporaneous copies of the great fresco of Leonardo da Vinci, by Andrea Solario, Cesare del Magno, Marco d'Oggiono, Ant. de Glaziate, and Lomazzo. All of these copies are much inferior to the very fine copy at Ponte Capriasca, already earlier referred to. The original, although the hand of Time has dealt rather harshly with it, and although it has suffered, owing, perhaps, to some carelessness on the part of the great master in his selection of its position, alone exhibits the marvellous genius of a master in every feature and pose of the little band gathered around the sacred table.

All the copies are over-shadowed by the excellence of the famous original, which, unfortunately, bears evidence of early neglect, when no doubt the value of the masterpiece was not fully appreciated.

Passing quickly through the various narrow streets, stamped indelibly with the architectural monuments of the centuries, and containing evidences of the strong artistic character of the peoples of those bygone days, one reaches the quiet Piazza Sant' Ambrogio, wherein stands the famous old Church of Sant' Ambrogio, certainly one of the quaintest and greatest architectural treasures of Northern Italy.

This church was one of the few spared in the destruction of 1162, and it may be that those responsible for the wholesale destruction in those far-off days had, unlike their copyists in the one-time presumed very enlightened and civilised twentieth century, perhaps some spark of feeling left in their brutal natures, which permitted them to spare a very few of the early religious temples of the peoples of these parts.

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Sant' Ambrogio, a Romanesque basilica, is a famous example of the early Lombardic style, with a dome and atrium but no transept. The earliest church was dedicated to SS. Gervasius and Protasius and was founded in 386 by St. Ambrose.

It was rebuilt by the Benedictines in 800, but nothing excepting the chancel remains of the work of these times and the Campanile dei Monaci.

It is recorded that the atrium was renewed by Archbishop Anspert in 868-881, and the larger portion of the church was rebuilt in the twelfth century.

The Campanile dei Canonici dates from 1128. Ricchini restored and commenced the remodelling of the interior under Archbishop Federigo Borromeo. The interior of this dignified and simple ancient structure is of considerable interest; there is a roomy nave and a strange series of side galleries, together with an octagonal cupola over the high altar.

In a little chapel on the left aisle there is a fine fresco by Borgognone of the "Risen Christ," and in other parts of the church frescoes by Gaudenzio Ferrari of "The Bearing of the Cross," "Descent from the Cross," and the "Three Maries." In the chapel to the right of the choir there is an altar-piece by B. Luini of the Madonna and Saints.

An early Christian sarcophagus attributed to the sixth century and a pulpit restored in 1196, with rude late Romanesque carvings, stand in front of the choir.

The high altar is of very special interest and note, was restored in 1196, and still retains its original decorations of about the year 835. It is the only complete example of this particular period existing. This altar consists of reliefs on gold and silver grounds, enriched with magnificent enamel and jewelled work. This wonderful specimen of goldsmiths' art, which Angilbertus, an Archbishop, presented to this basilica of Sant' Ambrogio, is now railed in to protect it from danger of robbery and from damage.

The front is of solid gold, and the sides and back of silver gilt, and is altogether a most unique and exceedingly precious possession. Precious stones of great value and costly enamel have been used most lavishly in the gorgeous ornamentation of this altar.

A twelfth-century canopy over the high altar is of much interest. The Tribuna contains very fine Renaissance stalls by Giac. dei Mamo and others (about 1469), and an ancient episcopal throne and many other items of great interest are to be seen in this quaint old church.

Sant' Ambrogio is undoubtedly, next to the cathedral, the great attraction of Milan, and although its claim upon the architect is great, it has equal claims upon the antiquary and ecclesiologist. Striking towards the southern quarters of the city by the Via Torino, one of the busy main arteries leading out of the south-west corner of the Piazza del Duomo, it is to be noticed that in some of the poorest thoroughfares the dwellings and buildings of the most insignificant Italian citizens have stamped upon their very lines the artistic spirit of their ancient designers.

Soon the little church of San Satiro is seen standing upon a small island site. This edifice, which was erected in 1480 by Bramante and others upon the site formerly occupied by a church founded in 879, took the place of the structure which was built in 1242.

The octagonal baptistry, which was originally the sacristy, is a fine early-Renaissance morsel, considered by many to be perhaps one of the finest in Lombardy.

A quaint little building with a cupola, known as the Cappella della Pietà, ascribed to the year 879, stands at the left transept end. A circular fabric of the sixteenth century and known as the church of San Sebastiano, stands in the same street, and further on the church of San Giorgio al Palazzo, founded in 750 and rebuilt in 1600.

This latter church, which was restored in the nineteenth and present centuries, contains paintings by Luini of considerable value and note.

(To be continued.)

SCULPTURES OF RHEIMS CATHEDRAL.

RECENTLY Mr. Arthur Gardner, M.A., F.S.A., gave at Carpenters' Hall, London Wall, E.C., a lecture on the "Sculptures of Rheims Cathedral," and illustrated it with many fine photographic slides. The church, he said, presented a veritable pageant of thirteenth-century sculpture. It has been calculated that it contained 2,500 statues, great and small, of which some 600 were in the western porches. Many of the figures on the upper parts of the church, especially of the west front, had suffered from restoration, but those that were genuine were masterpieces. The broad summary treatment of these figures meant to be seen from below was very effective. The angels of the buttress niches with their outspread wings, the kings and prophets, and the well-known church and synagogue of the transept fronts may be singled out for special praise. In addition to these great statues, the heads and gargoyles that occupy every point of vantage on tower and parapet and buttress are of endless variety and marvellous power.

The interior of the church also afforded a fine field for sculpture, though the rich furnishing of shrine and tomb and altar have not come down to our times. Besides the elaborately carved capitals of the main piers, the interior face of the west wall, round the doorways, is divided up into niches containing groups of figures illustrating the history of St. John the Baptist and the Nativity, separated by exquisitely carved bands of naturalistic foliage. This was a unique feature in French architecture, and it is to be specially regretted that a large portion of the work has been badly calcined by the fire which raged in the interior of the cathedral.

It is, however, in the porches that the most characteristic sculpture is to be found. The cathedral possesses no less than six elaborate portals, three in the north transept and three in the western façade. The former are the earlier, dating from the first half of the thirteenth century; while those of the west appear to belong to the third quarter of the century. Records of the actual building of the church are scanty, but the names of the early master-masons have been preserved. We probably owe the general scheme to Jean d'Orbais, who began the present building in 1211. He was succeeded by Jean le Loup in 1231, who began the portals; who was in turn followed by Gaucher de Reims, who worked from 1247 to 1255, and we should probably be right in attributing to him a great part of the western porches. His successor, Bernard de Soissons, was in charge from 1255 to 1290, and would seem to have completed the porches, especially the upper parts, and to have worked at the western rose above them. Other capable masons and sculptors must have worked under these men; but it would be of little use to go much beyond the above vague attributions and attempt to assign any particular statue to this or that artist. The tomb of one of these master-masons, Hugh Libergier, master of the destroyed Church of St. Nicaise at Rheims, is preserved in the cathedral, and depicts him as a man of distinction in fur cap and long robe, holding a model of a church and a measuring rod in his hands.

There is a curious mixture of style in the statues of the porches, and the porches themselves of the north transept, continued Mr. Gardner, are unsymmetrically placed, and look like an afterthought. A series of prophets and patriarchs, serving as types or precursors of Christ, in the right porch of the west front, are of an earlier style than any of the other figures near them, and closely resemble a similar set at Chartres, dating from about 1210. It looks as though preparations had been made for a great sculptured portal at the west, but that when the builders came to that point they wanted something more up-to-date, so revised the old design and only incorporated the "Precursors" in the new scheme, relegating the other work already prepared to the transept front. The subjects of the transept sculptures corroborate this theory, as we find one porch dedicated to the Last Judgment, with Christ on the trumeau and

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the Apostles on either side, and the other to the local saints of the diocese. The "Precursors" of the western porches would have flanked a porch dedicated to the Virgin, thus making up the usual theological scheme. The third porch of the transept formerly opened into a cloister, and the only sculptural decoration it contains is a delicately carved relief of a Madonna and angels with clerics performing a funeral service—evidently part of a late twelfth-century tomb from the previous cathedral, and taken here from the ruins to form a tympanum.

The porch of the local saints has a large tympanum in several bands, mainly devoted to the life and miracles of St. Remi and ending with the scene of his baptism of Clovis. The martyrdom of St. Nicaise, together with what appears to be the story of Job, are also depicted. The trumeau is occupied by a magnificent ecclesiastic, probably St. Remi or St. Sixtus, and the saints of the diocese stand at the sides of the porch. The style is of the simple character of early thirteenth-century work. Rather later in treatment, the "Last Judgment porch" has in the tympanum the General Resurrection, St. Michael separating the good from the evil, Hell cauldron into which the lost are conducted by demons, and Heaven represented by Abraham's bosom, to which the gracious angels are conducting the little souls of the blest. The work is of great beauty and charm. The well-known statue of Christ is fine; but it has a certain modern prettiness about the face that raises a suspicion that it has been touched-up or worked over by a restorer. The Apostles on either side are curiously inferior in quality, and also look somewhat restored. Their short proportions and close horizontal folds of the draperies give them a classical look, and seem to be derived from the schools of the South of France.

The western porches date from the third quarter of the thirteenth century and are of marvellous richness and beauty. The usual sculptured tympana were replaced by windows to admit more light, and the subjects that would ordinarily have been treated in them—the Crucifixion, Coronation of the Virgin, and Last Judgment—are relegated to the pediments of the gables and to two little supplementary gables on the external buttresses, with reliefs representing the Invention of the Cross by the Empress Helena and the life and visions of St. John. The lintels over the side-doors are occupied by reliefs depicting the Conversion of St. Paul, and small reliefs of great beauty, though unfortunately much mutilated, cover the jambs of the doorways. Many of the statues in the mouldings were replaced in the eighteenth century by new work of very poor quality. At the time of the German bombardment a huge scaffolding, which had been erected for repairs to the north-west tower, caught fire, setting light to the roof and scorching the whole surface of the stone in its immediate vicinity. The porch below this tower therefore suffered worse than any of the others and most of the splendid statues in it have been irretrievably damaged.

Besides the early "Precursors" already described, work of several hands, with marked differences of style, may be distinguished in the statues of these porches. The most remarkable group is that of the Visitation, which is visibly inspired from the antique. The large heads, stately and rather broad proportions, and crumpled folds of the draperies remind us of Græco-Roman work, and some critics have gone so far as to assert that these fine figures are eighteenth-century restorations! A moment's comparison, however, with the statuettes in the moulding above, which were added at this period, will convince the spectator that both could not have come from the same workshops. Indeed, such fine work as the Visitation could not have been produced in 1739. Classical reminiscences are not rare in the thirteenth century, as may be inferred from the existence at Bamberg of a Visitation group of slightly later date, evidently inspired by the Rheims statues. The thirteenth century sketch-book of Villars de Honnecourt also contains drawings showing just this type of drapery, and we shall, therefore, be quite safe in regarding these statues as genuine thirteenth-century work and a later and perfected development of the ateliers which produced the statues of the north transept porches, where are also to be noticed classical reminiscences. One or two other statues have been attributed to the same hand, though the classical characteristics are less marked. The figure of the Queen of Sheba, now unfortunately hopelessly ruined, was a transitional figure with long sweeping folds of drapery, leading us to what may be considered the typical productions of the Rheims sculptors. These latter are of extreme grace and beauty; the faces are smiling and gracious, the draperies fall in long deeply-cut functional folds, and the attitudes are free and simple. In them we see the supreme achievement of the Gothic sculptors in the plenitude of their power. The most advanced figures are the St. Joseph of the Presentation group, and the angel of the Annunciation. In these the draperies are becoming a little more complicated, and the facial expressions begin to show a tendency to picturesque exaggeration, which are the first signs of the decline into fourteenth-century style.

Mr. Arthur Gardner has a wide reputation as a photographer, and recently a notable exhibition of his prints was held at the Medici Galleries. A souvenir of the exhibition has been published by the society, consisting of fifty plates showing French sculpture of the thirteenth century, together with letterpress by Mr. Gardner. The plates are well reproduced by the collotype process.

TOWN PLANNING SCHEMES AND OPEN SPACES.*

By LAWRENCE W. CHUBB, Secretary of the Commons and Footpaths Preservation Society.

(Concluded from last week.)

Undeveloped Land Duty.—Then, too, owners should be invited to realise that freedom from undeveloped land duty is enjoyed, as provided by the Finance Act, 1910, in the case of lands devoted to public uses. The Act declares that this duty shall not be levied:

"*(a)* On the site value of any parks, gardens, or open spaces which are open to the public as of right;

"*(b)* On the site value of any woodland, parks, gardens or open spaces reasonable access to which is enjoyed by the public or by the inhabitants of the locality where, in the opinion of the Commissioners, that access is of public benefit;

"*(c)* On the site value of any land where it is shown to the Commissioners that the land is being kept free of buildings in pursuance of any definite scheme for the development of the area of which the land forms part, and where, in the opinion of the Commissioners, it is reasonably necessary in the interests of the public, or in view of the character of the surroundings or neighbourhood, that the land should be kept free from buildings; and

"*(d)* On the site value of any land which is *bona fide* used for the purpose of games or other recreation where the Commissioners are satisfied that the land is so used under some agreement with the owner which, as originally made, could not be determined for a period of at least five years, or where, in the opinion of the Commissioners, other circumstances render it probable that the land will continue to be so used."

The Value of Tact.—Successful efforts to obtain open spaces in town planning schemes must depend upon two factors—the natural sympathies of the landowner and the manner in which he is approached by the Town Planning Committee. The gift of tactful persuasiveness should indeed be the first attribute of members of such committees and of their officials.

It would seem that altogether ninety-eight local authorities have applied for power to prepare 129

* Abstract of a Paper read before the Town Planning Institute.

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schemes. The necessary consent of the Local Government Board has been given to the preparation of schemes in 115 cases, and important schemes for Birmingham and Ruislip-Northwood and a small scheme for Rochdale have been finally approved.

The total area of land proposed to be included in the schemes apparently reaches the large total of 236,962 acres, or 370 square miles. It is therefore clear that, notwithstanding delays in proceeding with many proposed schemes in consequence of the war, the Housing and Town Planning Act bids fair to work a revolution in the future development of cities.

Of the authorities replying to the author's question in regard to existing open spaces within town-planning areas, forty-four reported that such land already exists. The area in the aggregate amounts to 2,778 acres, including numerous tracts of common land. Thirty-six Councils stated that no public open spaces yet existed in their proposed town-planning areas, and some said that ample open spaces are to be found on the borders of those areas.

The next question elicited information as to whether existing open spaces were deemed adequate and, if not, whether steps would be taken to provide a sufficiency for present needs and probable future requirements. This has produced somewhat unexpected replies. A fair proportion of the local authorities report that the public needs are inadequately supplied, and that they are doing their best to meet the dearth of open spaces. On the other hand, it is stated on behalf of fifteen local authorities answering this question that they do not contemplate taking any steps to secure the provision of open spaces. In some of these instances very large areas will be included in the schemes, and the existing facilities for recreation are obviously far too scanty to meet the current needs.

It is sad to reflect that a golden opportunity is being lost by such authorities. Never again will it be possible for them to make such favourable arrangements as should now be feasible.

It is refreshing to turn from disappointments to definite achievements. Thirteen authorities stated in respect of eighteen schemes that they are taking steps to preserve 1,189 acres of parks and recreation grounds. In fifteen other cases steps are also being taken, but the area under discussion was not disclosed. No decision seems to have been reached to take action to secure open spaces in respect of the remaining eighty-one schemes.

The provision of 1,189 acres is a matter for congratulation, and is the direct outcome of the working of the Act; but it must not be thought that this area is uniformly distributed over the eighteen schemes affected. No less than 1,070 acres of the total is provided for under six schemes of three authorities, leaving but 119 acres between twelve schemes. The three authorities concerned are Birmingham (794.32 acres between four schemes), Ruislip-Northwood (141 acres), and Oldbury (135 acres).

The Birmingham proposals are of an exceedingly interesting and ideal nature, and it is much to be desired that they should be carried out in their entirety. The essential feature is to be found in a proposal to provide spacious walks along the banks of the Rivers Rea and Cole and to link them up with similar walks along the banks of a canal running at right angles to those streams. One lengthy and unbroken horse-shoe shaped reserve will result. With the connecting valley-parks this proposal will involve the preservation of 431 acres. The residue of the land to be secured will, in the main, consist of playing fields and pleasure grounds. Of the great area proposed to be saved 472 acres is comprised in the South Birmingham scheme. The existing open spaces there amount to 126 acres, so that there will eventually be provided for the public use and enjoyment 598 acres, or 7 per cent. of the total area of 8,400 acres within the ambit of the scheme.

Out of the 141 acres to be provided at Ruislip-Northwood 106 acres represent gifts from landowners in return for other concessions, and 35 acres are being purchased at a reduced value in consideration of this land being retained unbuilt upon.

Of the 135 acres to be saved at Oldbury 110 acres will be purchased at agricultural value, and the owners have agreed to give 25 acres.

Owners have also agreed to give open spaces at Chesterfield, Finchley, Middleton, Prestwich, Sutton, Walthamstow, and Whitley and Monkseaton. In this connection it is stated that the gifts in some cases are the result of concessions as to building-line frontages and the paving or width of streets, evidence of the value of the Housing and Town Planning Act for bargaining purposes. In other instances negotiations are proceeding on similar lines with every prospect of success. In others again the full building value has been exacted.

It is noteworthy, too, that at Warrington an effort is being made to secure open spaces on the basis of one acre in ten.

As might be imagined, the question as to the attitude of owners towards the provision of open spaces under town-planning schemes has led to the recital of varied experiences. In the majority of instances it is said that owners generally have shown themselves in cordial sympathy with the broad principles underlying the town-planning movement; and that they have manifested a praiseworthy desire to meet the wishes of the Councils. Other reports indicate that the experience of some Councils is that owners oppose town-planning schemes at every stage, placing every possible obstacle in the way of their attainment. The general experience, however, clearly points to the conclusion that most owners, if approached in the right spirit, are perfectly ready to listen to argument.

The experience of the Councils as to the efficacy of the Town Planning Act is by no means uniform. One Council has determined that it is simpler to obtain open spaces under the powers bestowed by previous legislation as need arises rather than waste time in endeavouring to placate unreasonable owners. Others have had to buy compulsorily, and think objectionable the tedious delays involved in carrying through a town-planning scheme. Others, again, stated that their schemes have not progressed sufficiently to enable them to express an opinion, and six say that they have found the Act both workable and satisfactory.

Conclusions.—From this short summary of the replies furnished by the clerks or surveyors of local authorities which have commenced town-planning schemes, two broad facts emerge.

In the first place, it is clear that the provision of open spaces, without payment, or on exceptional terms, has been, and can be, brought about under town-planning schemes. In the second place, it is equally obvious that the importance of securing open spaces is not yet fully realised, since less than one-third of the local authorities concerned would seem to have ever considered the matter.

Procrastination will prove to be a fatal error. No town-planning scheme is likely to be formulated or approved for a district where development is not probable, and sooner, rather than later, open spaces will indubitably be required. The broad lines of the scheme must be settled at an early stage, and once roads have been made and building frontages taken up, the possibility of carrying through a comprehensive and cheap open-space scheme will have disappeared. Owners will then ask themselves why they should be called upon to make sacrifices of valuable land without concessions. And what concessions will it be in the power of the Council then to offer? Arrangements will have been completed as to building frontages and roads, and the Councils will find that they have lost the great advantage of bargaining placed at their disposal by the Act.

To make provision for parks and recreation grounds at an early stage of a town-planning scheme is to take out a policy of insurance, the benefits of which,

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commencing at once, will endure for ever. Once this truth is realised, Councils will not pause to ask themselves what is the minimum amount of open space that they should provide. With the knowledge that the happiness of future generations, as well as the protection of the amenities of the district, is so largely in their hands to make or to mar, will they not rather boldly determine to preserve every acre which can be saved?

REINFORCED CONCRETE AS APPLIED TO WATERWORKS CONSTRUCTION.*

By CHARLES F. MARSH, M.Inst.C.E., M.I.Mech.E., M.Am.Soc.C.E., Vice-President C.I.

IN the construction of works specially required for the purpose of the conveyance and storage of water reinforced concrete can be usefully employed for many purposes.

The chief uses for this material are the construction of dams for impounding water, of aqueducts and pipes for its conveyance, and reservoirs and tanks for its storage.

There are also many works of an incidental nature for which reinforced concrete may be employed, amongst which are retaining walls, bridges, slope coverings, buildings, fencing, and sundry other structures of various descriptions essential for the completion of any large system of water supply.

Concrete, &c.—The concrete used for structures which must resist the pressure of water should be richer in cement than that used for the generality of structures.

For reservoirs, tanks, and dams, where there is sufficient thickness, the concrete should be mixed in the proportions of 1: 1½ to 3, or 810 lb. of cement to 13½ cubic feet of sand and 27 cubic feet of broken stone or shingle, which mixture is sufficiently watertight for any but very considerable heads, but for pipes and structures of small thickness, say less than 3 inches, a mortar mixed in the proportions of 1 to 1½, or 1,620 lb. of cement to 27 cubic feet of sand, should be used. This mixture is, of course, no more resistant to water pressure than a 1: 1½ to 3 concrete, but in a thin structure there is a danger in the use of stone or shingle, since two pieces may possibly come together, and any failure in the proper consolidation of the concrete may leave a plane of leakage through the concrete. The size of the broken stone or shingle should not exceed such as will pass through a ¾-inch square-meshed sieve, and may with advantage be ½-inch gauge. It is not advisable to use a richer mixture, as rich mixtures shrink more when drying and expand more when wet than leaner mixtures, and consequently cracks are more likely to be induced; while it has been proved conclusively that with proper care in mixing and placing a mixture in the proportions of 1 to 1½ to 3 is practically impervious under considerable heads.

For pipes under pressures exceeding about 40 feet special linings should be used, such as the sheet steel tubing in a Bonna pipe or other suitable layer of impervious material.

For any structure which has to resist the percolation of liquids it is advisable, in the author's opinion, to mix some waterproofing compound with the concrete, or to otherwise provide against leakage by the use of a soap and alum wash, paraffin wax, or other suitable protective coating.

For increasing the imperviousness of concrete or mortar, ordinary hydrated lime has been used very successfully and appears just as effective as any of the patent compounds on the market. It can be used in proportions up to 10 per cent. of the weight of cement without injuriously affecting the strength of the mixture, but 5 per cent. is sufficient for any ordinary purpose.

The concrete should always be kept damp for some time after moulding, depending on the richness of the mixture. The period in the case of a 1: 1½: 3 mixture should be about four weeks.

* Abstract of a Paper read before the Concrete Institute.

In structures of considerable length, which may be alternately wet and dry and are exposed to the variations of temperature, it is advisable to provide against cracking which is almost certain to occur. Such structure should have specially constructed contraction joints not more than 30 feet apart, leakage being prevented at the joints by the insertion of sheet lead or copper baffles extending well into the concrete on each side of the joint and bent over at the extremities to form a good key.

In the construction of all structures to resist the pressure of liquids, special care is necessary to provide adequate reinforcement against shrinkage due to the setting of the concrete, fall of temperature, and excessive dryness.

Dams.—Dams for impounding water have not been constructed of reinforced concrete in this country to any extent up to the present time, but there have been many cases in America where this material has been used for such dams.

When reinforced concrete is employed for the construction of dams they are usually of a hollow form of construction, having up-stream and down-stream slabs supported on cross walls carried upon a foundation slab.

From the foundation slab a core wall must be carried down under the bottom of the up-stream slab, and extended well into a watertight stratum. The provision of an adequate cut-off wall is most essential, as some of the dams already constructed of this material have failed owing to the neglect of this precaution.

The up-stream slab is generally constructed with a flat slope not steeper than 1 to 1, since the flatter the slope the more uniform is the pressure on the base.

Elevated Tanks.—Perhaps one of the most economical uses of reinforced concrete is in the construction of elevated tanks, of which there are many examples in existence. With care and skill in the design these structures may be made quite picturesque features of the landscape, and are in any case less objectionable than elevated steel tanks on framed supports. A reinforced concrete tank can be constructed at a cost of from 40 per cent. to 50 per cent. that of a tank formed of riveted steel plates, and they will in general be less expensive than tanks of pressed steel or cast-iron plates.

When designing circular reinforced concrete tanks it is advisable to limit the working resistance of the steel to 12,000 lb. per square inch, since, although the tensile resistance of the concrete is neglected, the elongation of the steel bars must induce elongation in the concrete, and a higher stress in the steel will in all probability cause the concrete to crack. It is also advisable to insert two series of circular rings in the walls of the tank, one near each surface, in place of one series at the centre of the thickness. At least one case has occurred where the concrete outside the central series of hoops broke away and caused the failure of the structure. It must be remembered that whereas the interior of the tank is kept at a fairly constant state of moisture and temperature, the outside is exposed to the variations in temperature and humidity, and consequently the two surfaces are under very different conditions affecting the expansion and contraction of the concrete.

In the construction of tanks it is sometimes the practice to render the inside with sand and cement to which is added a waterproofing compound. Some constructors rely entirely on the imperviousness of the concrete when properly graded, proportioned, mixed, and deposited; others coat the inner surface with some retentive composition such as paraffin wax, while others mix a waterproofing substance in the concrete used in the construction. The proportion for the concrete most generally adopted for the tank itself is about 1 to 1½ to 3, while a mixture in the proportion of about 1 to 2 to 4 is almost universally used for the supporting columns, bracing, and beams, and also for the roof.

Reservoirs Entirely or Partly in the Ground.—In the construction of reservoirs of this nature the question as to the economy or otherwise resulting from the use of

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reinforced concrete should receive careful consideration before its employment is decided upon. The method of design, if this material is decided upon, will also require careful consideration.

In many cases it is not economical to use reinforced concrete for the walls or floor, but it is almost universally an economical material for roof construction.

If a considerable portion of the depth is below ground the form of retaining wall construction, with a bottom slab at the back tied to the front slab by ribs, is not an economical form of construction, as the excavations have to be considerably enlarged to accommodate the bottom slab.

A wall designed as a cantilever, supported from the floor of the reservoir, will reduce the excavation, but great care is necessary to provide ample support at the bottom to prevent failure between the base of the wall and the floor when the reservoir is empty.

If the reservoir is covered and the covering can be constructed before an excessive loading is brought upon the walls, the roof beams and similar beams formed in the floor can be constructed to support beams along the top and bottom of the wall, which in their turn support the ends of vertical beams between which the walls of the reservoir can be constructed as slabs with horizontal reinforcements.

The covering usually adopted for reservoirs is of the beam and slab type, similar to ordinary floors, and supported by columns, but small circular reservoirs may be covered with a flat dome in a similar manner to that frequently employed for elevated tanks.

Aqueducts.—Reinforced concrete is a suitable material for elevated aqueducts, a notable example being the aqueduct used to convey water from the Rhone to the Simplon Tunnel works which was designed and constructed by M. Hennebique. This aqueduct was nearly two miles long with a fall of 1 in 830. It was of box section about 6 ft. 3 in. by 6 ft. 3 in., and the side walls were about 4 in. thick, the floor about 4 in. at the sides, increasing to about 6 in. at the centre, and the roof about 3½ in. at the sides and 4¾ in. at the centre. The aqueduct was supported on reinforced concrete columns varying from 13 to 19½ ft. in height and placed about 16 ft. 6 in. centre to centre. Expansion joints were left over each support, with a sheet of flexible metal embedded near the outside. These joints were filled in after the first contraction of the concrete.

Open aqueducts built almost entirely above ground-level and those for carrying water over valleys may, with economy, be constructed of reinforced concrete, but for those constructed mainly below ground-level this material will not be so economical for the same reasons as given in the case of reservoirs.

Pipes.—Pipes under small heads, say up to about 40 ft., may be constructed of reinforced concrete without any special impervious material being embedded in the thickness.

For heads over about 40 ft. some special impervious layer is, in my opinion, necessary. The well-known Bonna pipe is a good example of this type of construction. The impervious layer is formed by a thin sheet steel tube with longitudinal welds formed by the oxy-acetylene or electric processes. This tube is embedded in the thickness of the concrete with the reinforcement outside for smaller heads and inside and outside for greater heads.

THE Secretary of the Royal Academy of Arts gives notice that the President and Council will shortly elect one Cousins annuitant. Applicants for the annuity, which is of the value of not more than £80, must be deserving artists, painters in oil and water-colours, sculptors, architects, or engravers in need of aid through unavoidable failure of professional employment or other causes. Forms of application can be obtained from the Secretary, Royal Academy of Arts, Piccadilly, W. They must be filled in and returned on or before March 18.

STATUS OF THE ENGINEERING PROFESSION.*

By PERCY GRIFFITH, M.Inst.C.E., F.G.S., F.R.San.I.

AT a time when civil, as distinguished from military or naval, engineering work is practically at a standstill, it seems only natural that our attention should be directed to such objects as, in normal times, are necessarily considered of secondary importance. I therefore make no excuse for directing a portion of my address to the much-discussed and thorny question of how to improve the status (or dignity) of our noble profession. A noble profession it undoubtedly is, for it includes in its ranks those who have contributed, and are contributing, to the material welfare of the community in every sphere of commercial, manufacturing, or scientific activity. It is therefore only natural that the members should be jealous of its dignity, and anxious that this should not suffer from the changing conditions under which it is now practised. It is, however, undeniable that in certain aspects, the dignity of the profession and the welfare of its members are alike suffering from defects due to the very rapidity of its development.

The term "engineer" is itself anomalous and misleading, for it applies equally to one who has charge of an engine and to one who designs the most important works for "directing the great sources of power in Nature for the use and convenience of Man." In the one case, the root is common to that of the word "engine," and in the other, to that of the word "ingenious." Thus the profession of engineering includes greater diversity of talent and greater varieties of occupation than any other profession, and some confusion and overlapping are inevitable.

The efforts so far made to eliminate this confusion and overlapping have tended in the direction of sub-division, and as this process has developed at hazard and without any systematic regulation, the result is, as might be expected, anything but satisfactory, and the public have great difficulty in differentiating between the various applications of the word "engineer." The first example of this sub-division is revealed in the term "Civil Engineer," which was applied in the first instance to distinguish civil from military engineers. A further sub-division occurred when the Institution of Mechanical Engineers developed proportions which proved this branch of the profession to be a large and important one; and the fact that two large institutions labelled respectively "Civil Engineers" and "Mechanical Engineers" existed side by side, led gradually to a distortion of the original application of the term "Civil Engineer," and its use to distinguish those not engaged in the "mechanical" branches. This was, in respect of the "status" of the profession, a very unfortunate development, because it tended to discount the influence of the Institution of Civil Engineers as the representative of the civil, as distinguished from the military, branch, and paved the way to the further sub-division of the profession into sectional societies and institutions, without any common interest or tie one with another.

This unfortunate tendency towards decentralisation has been accentuated by the rapid development of new branches of engineering, and the increasing need for "specialising," and at the present time the term "engineer" is almost as wide and varied in its application as the term "man" itself.

It will, I think, be conceded that the defects to which I have alluded, and particularly the public ignorance as to the nature, practice, and status of our profession in its various branches, are largely due to this excessive "decentralisation" and the want of an institution which could be accepted without question as representative of the profession as a whole.

No doubt a very large number of engineers would readily admit (and in some cases, claim) that the Institu-

* Part of the Presidential address by Mr. P. Griffith to the Society of Engineers (Incorporated).

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tion of Civil Engineers fully meets this want, but, on the other hand, it is open to question whether this body, established " for the general advancement of mechanical science," is altogether fitted for the work involved in regulating the relationship between the various branches of the profession and enlightening the public on the nature, practice, and status of the members thereof.

Having in view the objects I have already mentioned, I venture to advance two propositions which seem to me to summarise the essential factors both in the problem itself and in its satisfactory solution: firstly, that it is necessary to educate the public as to the functions, qualifications, rules of conduct and basis for remuneration of the various classes of engineers; and, secondly, that this education of the public, as well as the settlement of questions affecting engineers in their relationship one to another, calls for the establishment of a new organisation constituted on somewhat different lines to the various institutions at present existing, the chief purpose of which is the discussion of technical problems arising in the exercise of professional duties.

Let me here point out that in using the term " profession," I do not refer alone to the so-called " professional " branch, represented by " consulting engineers." Being myself a member of this class, I am only too well aware of the want of organisation which is responsible for so many of the disadvantages under which consulting engineers in this country are working at the present time; but I am also aware that other branches of the profession are similarly, if not equally, in need of organisation; and I am convinced that no effective results can be obtained unless and until the various branches of the profession are brought together in some kind of federal union having as its main objective the consideration and settlement of those problems which are common to the whole profession. Chief among such problems are (1) the preliminary training necessary for entering the profession; (2) the relationship between the various sections, and particularly the delimitation of each, so that overlapping may be avoided; and (3) the adjustment of the relations between the public and the profession as a whole.

With such an organisation once established on comprehensive and representative lines, the subsequent subdivisions could be effected with comparative ease. These should, in my opinion, be formed primarily on the basis of the nature of the services rendered rather than on the class of work involved; thus the following sections would be the most obviously necessary, although others might be added as occasion arose—viz., consulting engineers paid by fees, manufacturing engineers and contracting engineers working for profit, engineer officials paid by salary, and employees of each section paid by salary, the last-named, of course, not including mechanics employed by manufacturing and contracting firms, who already have their trade-unions to look after their interests. In regard to classification according to the class of work involved, there exist societies or institutions representing nearly every branch of engineering work, and I do not suggest any serious modification of these is either necessary or desirable. I do, however, suggest that the technical body representing each branch of the profession should make a point of standardising the qualifications of the various grades of members so that the holding of any particular rank in a given institution should form a reliable guarantee of ability and experience, and warrant a reasonable standardisation of the remuneration attaching to each whether by way of fees or salary; also that each such technical body should be affiliated or otherwise associated with the proposed central organisation.

No doubt the scheme here sketched in outline may seem somewhat " utopian," and I do not suggest that it would be easily carried into effect. Nevertheless, it seems evident that the engineering profession is large enough, important enough, and sufficiently coherent, in spite of its many sub-divisions, to warrant an effort to accomplish the ends I have indicated, and while I do not consider that any existing society or institution, least of all the Society of Engineers, is so constituted as to be able to undertake such a gigantic task, I do not hesitate to suggest the possibility that, as the one Society embracing equally every branch of the profession, it would not be inappropriate or impossible for the Society of Engineers to lay the foundation of an organisation on the lines herein indicated.

In order to explain my purpose in making the above suggestions, I will briefly state some of the difficulties which at the present time affect three large and important sections of the profession—viz.: (1) Consulting engineers; (2) manufacturing engineers; and (3) salaried engineering officials.

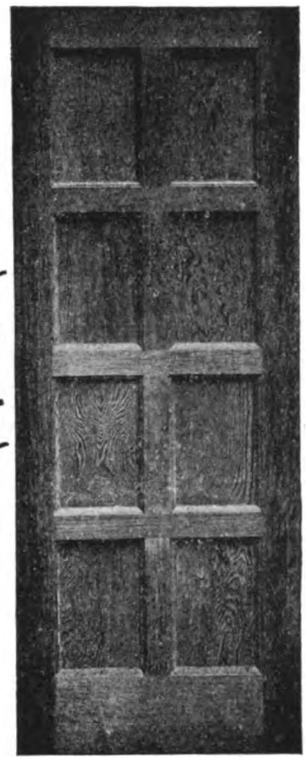
Consulting Engineers.—The most prevalent difficulty affecting this branch arises from the very natural and excusable tendency of clients to secure advice in the cheapest market; and, by obtaining special quotations of fees in advance, to induce engineers to offer specially low terms in order to secure business. This has led some few members of the profession to adopt the very undesirable practice of competing for work, which practice has, of course, encouraged clients to repeat the procedure. The only remedy for this state of affairs is the setting up of a standard minimum scale of fees, and a general agreement among all consulting engineers never to accept less. This is no doubt a difficult matter, and the Council of the Institution of Civil Engineers have declared that they consider it a matter of great difficulty so to standardise fees, except to the extent of stating the usual charges to be 5 per cent. upon the cost of works carried out, subject to some variations according to the size and nature of the work. Personally, I am more sanguine as to the possibility of finding a practical and workable solution of this difficulty. The most important essential of such a scheme is the standardisation of minimum qualifications attached to equivalent minimum scales of fees, and the provision of such qualifications and fees as will be applicable to junior members of the profession as well as to those with average or special experience.

Rules for professional practice in this country have already been adopted by the Institution of Civil Engineers and the Association of Consulting Engineers on lines similar to those prevailing in America and elsewhere; but as breaches of these rules are not, happily, common, the profession generally has not derived much benefit from them. The only adequate solution of this difficulty, so far as it exists in this country, would be the formation of a close corporation with statutory authority to exclude defaulters; in other words, a Registration Scheme authorised by Act of Parliament. It is very doubtful whether any such scheme could be applied to such a complex profession as ours, and in the meantime the formation of small societies, each with particular rules of conduct, is open to the grave objection that the lists of members and rules of conduct issued by such bodies can be supplied to prospective clients, and thus constitute a species of advertisement, the use of which is a manifestly unprofessional proceeding. In my opinion, the evils complained of can only be overcome by the preparation of a comprehensive code of rules of conduct, standards of qualifications, and graduated fees; which, being universally adopted, would automatically form the basis for a union of professional engineers akin to the British Medical Association, which has rendered such valuable services to the members of that profession, as well as to the public they serve. Should such action be carried out by common consent, the question of establishing a statutory scheme of registration would become open for consideration, although in my view it would be unnecessary.

Salaried Engineering Officials.—This large and rapidly increasing class is certainly as much in need of coordination and protection as that of consulting engineers. Here, again, the main object must be some kind of classification of qualifications with proportionate salaries, so that employers, particularly municipal authorities, may be protected from engaging incompetent men for the sake

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of economy in salaries, and the properly qualified officials may be protected from competition on the part of less competent men.

It is also important to establish, where necessary, and to develop the practice of making salaried appointments the subject of legal agreements in which the duties, hours, and other limitations or privileges, are clearly set forth. It is only too frequently the case that officials are from time to time charged with additional duties and responsibilities for which they are not qualified, but which they cannot refuse without prejudice to their position, this being as unsatisfactory to the employer as to the official. It is also manifestly unfair that salaried officials should be allowed to engage in private practice without some specific limitations as regards the time allotted to this work, and the use of the employer's office, materials, and staff. It is also a fair claim on the part of consulting engineers in independent practice that salaried officials should not undertake private work at less than the minimum fees common in the profession and attaching to their particular qualifications and experience. Another point which requires attention is the protection of competent officials from personal hostility or annoyance on the part of individual members of municipal authorities, several cases of which have recently occurred.

Manufacturing and Contracting Engineers.—In this branch of the profession there is perhaps less need for interference than in those previously mentioned. Nevertheless, there is a growing tendency on the part of contractors to undertake purely consulting work. This is by no means necessarily the fault of the contractors, but arises most frequently from a (natural) tendency on the part of customers to obtain professional advice free of direct charge, oblivious of the fact that such services must be eventually charged for indirectly. There may at first sight appear to be some difficulty in fixing a clearly defined limit between an estimate for certain works or plant, and professional advice, but it is surely possible to educate the public, and at the same time to secure the co-operation of contractors, in differentiating between *independent* professional advice, which should be strictly reserved to consulting engineers paid by fees, and quotations for specified goods or work which alone lie within the sphere of the contractor or manufacturer trading for profit.

These are a few of the great problems which the engineering profession should face, and I cannot help thinking that there are many members of it, who, during the period when their usual activities are suspended, might with advantage devote their attention to the solution of the difficulties involved.

In concluding my reference to this subject I will only add that the views I have expressed are not necessarily those of the Council as a body, neither are the suggestions which I have made above put forward as representing the policy to be pursued by this Society. The Council are anxious to receive assistance in the form of suggestions or opinions from all engineers, whether members of this Society or not, and my purpose has been to summarise the difficulties to be overcome, and to suggest a means for accomplishing the end in view, which may lead to useful discussion, and possibly to joint action on behalf of the whole profession, which is the essential factor in any advance towards that end.

THE Imperial Trade Correspondent at Toronto reports that a Chicago company, which has a large departmental store in Toronto, is having erected in that city, for use in connection with its mail order business, a fireproof building eleven storeys high with a floor space of approximately nine acres. The names and addresses of the contractors for the building, and of the consulting architects, may be obtained by United Kingdom firms from the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C. In making application the reference number (50) should be quoted.

TRADE ORGANISATION.

IN a previous issue (February 11) we gave an account of part of a series of lectures which Mrs. Sidney Webb was giving at the London School of Economics under the rather unwieldy title of "The Sphere of Vocational Organisation in the Control and Direction of Industries and Services." Particular reference was made to her historical survey of the architectural and engineering professions so far as they concerned her subject. In a subsequent lecture Mrs. Webb touched on the failures and successes of trade unionism, more especially as relating to the professional organisation of brain workers.

The first thing commented on was the extraordinary notoriety of trade unionism. Thus, if the subject of professional societies was raised in a club, most of the members would not know what was being talked about; but if trade unionism were mentioned they would practically all prick up their ears, and some would say the leaders ought to be hung up by the thumbs. The reason was that the trade-union movement was a revolutionary movement which did not rest content with the present order of society. The professional bodies, on the other hand, have no revolutionary doctrines, at most merely wanting better conditions or rather more freedom, whereas the manifestoes and ideals of trade unionism show the movement to be one intended to upset the existing order of things in regard to three or four matters which its followers regard as radical injustices. In the first place there is the whole question of the gross inequality in the distribution of wealth. Then there is the fact that forty million workers are perpetually on the verge of destitution. Not only have they much less of the good things of this world, but they are in a state of constant servility and of obeying orders. These injustices trade unionism tries to remedy. The oldest method was by mutual insurance—which still attracts people to the movement, though its effect is now theoretical rather than practical, since the State has undertaken many of the things. Collective bargaining, or, as it is also called, direct action, was illegal till 1861; but up to the outbreak of war was permitted. Under it the men can ruin the employer just as the employer can ruin them. It is based on equal rate for equal work, and possesses very great economic justification. Besides improving the conditions of labour it increases the efficiency of the industry concerned, because it turns the attention of the employer to improving the processes rather than to getting greater profit.

According to Mrs. Webb, Trade Unionism has not proved a complete success either in political or municipal life. One cause being that its representatives seem to get out of intimate touch with its interests as soon as they are elected. There appears, she said, to be a curious atmosphere that wraps itself round the working man when he gets into Parliament, and he begins to feel this is after all not such a bad world. In certain respects it was clear that mere trade unionism was a dead failure. Trade unions were springing up without much thought and without relation to one another. The members will have to make up their minds about future organisation. Another point to be determined is in connection with the referendum. It was unfortunate there is no really acknowledged central body in the trade union world. The movement should not go on refusing to use expert intelligence and other people's specialised brains. Trade Unionists refuse to use other people's brains, believing themselves competent to deal with anything, from an Act of Parliament to devising something complicated about benefits. But they will not get on until they have developed a staff of highly organised brains for each and all of these things. That point Mrs. Webb regarded as of the utmost importance. Great changes must be expected after the war. Unskilled labour and the women will be very anxious to keep their jobs. The State will be much more powerful and have got accustomed to the exercise of arbitrary powers. Indeed, unless Trade Unionists were careful they would find the movement back in the place it occupied before 1824.

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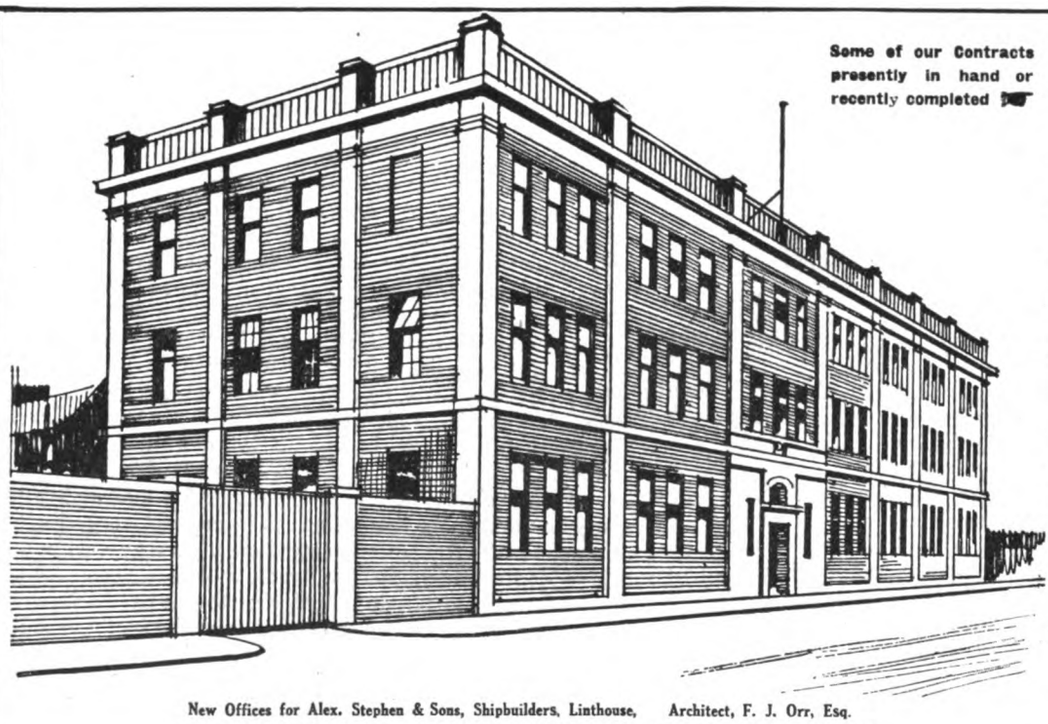
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Glasgow Royal Infirmary Reconstruction. James Miller, Esq., A.R.S.A., Architect.
Mitchell Library, Glasgow; West End Playhouse, Glasgow. W. B. Whitie, Esq., Architect.
McGeoch's Buildings, Glasgow; Nobel's Offices, Glasgow; Wallace Scott & Co.'s Factory, Glasgow; Western Infirmary Extension, Glasgow. Sir John Burnet, A.R.S.A., Architect.
Buchanan's "Black & White" Whisky Store; Pathological Building, Victoria Infirmary; School Board Offices, Glasgow; City Hall, Perth; Dewar's Bond, Perth. Messrs. H. E. Clifford & Lunan, Architects.
Royal Exchange Assurance Buildings, Glasgow; Mackie's "White Horse" Whisky Store; Distillers Co., Ltd., New Maltings; Rubber Factory for Campbell Achnach. Messrs. Frank Burnet & Boston, Architects.

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Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

A Side of Town Planning.

SIR,—When the history of town planning comes to be written "The Architect" should receive the highest eulogium for the efforts made to secure this much desired end.

You refer again to the subject in your article on "Home Affairs after the War" on February 25, where you rightly state that the root and branch of it is £ s. d.

We have got motor-cars on our roads—for good or bad they are going to remain—but is it necessary or desirable, when town planning or "road planning" in country districts, to think of nothing whatever but motor traffic? Wide straight roads, levelling hills and filling in valleys, are no doubt delightful for motorists, and this is too much the tendency of to-day; where all awkward corners are widened out of existence, and those delightful twining, narrow country lanes, with primroses and violets in the hedge-bottom, where we used to go in a pony-chaise or walking, are gone from us, and are a serious loss to our countryside.

I sincerely hope that £ s. d. will prevent straight roads in cities or country, except in places where frequent communication takes place between neighbouring cities, which applies chiefly to the north and midlands. In which case let the old roads meander along, just as old Dobbin originally made his way home, and let motor roads, in the nature of railways, run—wide, level, and straight from point to point over new ground. If the traffic is really great the frontages will soon be built upon.

In all old cities schemes of street-widening have spasmodically seized the Councils at odd intervals and in varying districts, where a start has been made and then left derelict; not only taking away from the rate-producing qualities of the property interfered with, but with all the adjacent property also. I think that every scheme of town planning should take cognisance of these dreary wastes and endeavour to get some schemes coupled up, or let some action be taken under "The Open Spaces Act, 1906" to define these waste spaces where "one-twentieth part is not covered with buildings" as public recreation grounds, whereby the owners would quickly increase their endeavour to make use of them, and, at all events, complete what they have started.—Yours etc.,

W. H. WOOD.

Queen Square House, Leeds, March 7, 1916.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BUCKINGHAMSHIRE.

Chalfont St. Peter.—Bungalow, Cross Lanes, for Mr. J. Lilley.

House: additions, for Mr. E. Franklin.

"Prestwood Lodge": addition, for Messrs. Recky.

CHESHIRE.

Crewe.—St. Michael's Church, Coppenhull: proposed parochial hall.

CORNWALL.

Westpenwith.—Proposed factory, for the Land's End Dairy Company, Ltd.

DEVON.

Horwood.—House, Little Torrington. Mr. Conn, architect, Meddon Street, Bideford.

DURHAM.

Annfield Plain.—Six houses, near Duffy Terrace. Mr. J. T. Bell, builder.

ESSEX.

Chelmsford.—Speersesque P.M. Hall, for the Chelmsford Circuit (£600).

KENT.

Sittingbourne.—Extensions to hospital and refuse destructor. Mr. W. L. Grant, architect, High Street.

LANCASHIRE.

Manchester.—St. Wilfrid's Church, Hulme: proposed school.

St. Edmund's Church, Miles Platting: Catholic school.

LEICESTERSHIRE.

Leicester.—Factory. Messrs. J. Bentley & Son, contractors, Clarendon Park Road.

Garage. Messrs. Clare & Simons, architects, Atlas Chambers, Berridge Street. Mr. F. Sleath, contractor.

House. Messrs. Clare & Simons, architects (as above). Mr. W. Potter, contractor (£630).

LINCOLNSHIRE.

Grimsby.—Proposed P.M. Church, Grant Thorold Park.

SUFFOLK.

Ixworth.—The "Greyhound" Inn: alterations, for Messrs. Greene, King & Sons, Ltd.

SURREY.

Croydon.—Four houses, Addiscombe Road. Messrs. Paish, Tyler & Crump, architects, 1 Addiscombe Road.

Five houses, Alfred Road, for Mr. H. G. Lumsden.

Fifteen houses, Headcorn Road, for Mr. W. Darwell.

No. 356 London Road: additions. Mr. P. Richardson, architect, 374 Lower Addiscombe Road.

Mitcham.—Houses and garages, Rustic Avenue, for Mr. A. A. Ballard.

WARWICKSHIRE.

Coventry.—Eight houses, Kingsland Avenue, for Mr. A. Barratt.

House, Lythall's Lane, for Mr. E. Daniels.

Two houses, Allesley Old Road. Mr. B. Ault, builder, Spon Street.

House, Binley Road, for Mr. C. Blockley.

Ten houses, Fisher Road, for Messrs. Moss & Co.

Two houses, St. Osburg's Road, for Mr. T. Dalton.

Four houses, Lowther Street, for Mr. E. Woodward.

Two houses and shops, Upper Well Street. Mr. G. H. Broad, builder, Radford Road.

Picture theatre, Stoney Stanton Road: generating house, for Mr. S. Warner.

YORKSHIRE.

Ackworth, Low.—Two houses, for Mr. Sutton.

Linthwaite.—Motor garage, Manchester Road, for Messrs. J. Dyson & Sons.

Scarborough.—W. M. Church, Queen Street: rebuilding.

WALES.

Pendre.—Two houses, for Mr. C. W. Rosser.

Penlan Cornel.—House, for Mr. W. Thomas.

Porth.—Cottage Hospital: extension. Mr. J. T. Jenkins, architect, Fairfield House.

Treforest.—Business premises, for the Ynysybwl Co-operative Society, Ltd. Messrs. A. Ll. Thomas & G. S. Morgan, Pontypridd, architects.

SCOTLAND.

Aberdeen.—Picture house, Wales Street. Messrs. Sutherland & George, R.I.B.A., architects, 26 Crown Street.

Arbroath.—Factory and warehouse, Lindsay Street: additions, for Messrs. Anderson & Chalmers.

Dumbarton.—Poorhouse: restoration. Messrs. Denny & Blain, R.I.B.A., architects, British Linen Bank Buildings.

Edinburgh.—Nos. 19, 21, and 25 Archibald Place: alterations, for the Committee of the Royal Infirmary.

Glasgow.—Electric-power Station, Blochairn Ironworks, Anniesland, for the Steel Company of Scotland.

Twelve houses, Glasserton Road, Newlands. Mr. D. Lamb, builder, 65 Possil Road.

Additions to Works, Caxton Street, Anniesland, for Messrs. Barr & Stroud, Ltd.

Paisley.—R.C. School, Stow Street: extension.

IRELAND.

Belfast.—The "Imperial" Hotel: additions. Mr. J. Munce, B.E., architect, Scottish Provident Buildings.

Galway.—Proposed R.C. Cathedral. Professor W. A. Scott, A.R.H.A., A.R.I.B.A., &c., architect, 45 Mountjoy Square, Dublin.

Moneyglass.—Proposed Church of Our Lady of Lourdes. Mr. E. P. Nolan, C.E. (of Downpatrick), architect.

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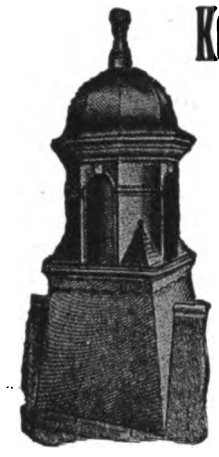
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FORTHCOMING EVENTS.

Friday, March 17.

London Society: Lecture, entitled "Kensington: Past and Present," by Mr. A. Moor-Radford, in the Hall of the Royal Society of Arts, at 5 P.M.

Monday, March 20.

Victoria and Albert Museum: University Extension Lecture XXII. on "English Renaissance Architecture (1500-1900)—Georgian Town and Country Houses," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Tuesday, March 21.

Illuminating Engineering Society: Discussion on "Some Aspects of the Design and Use of Glassware in Relation to Natural and Artificial Illumination," in the Hall of the Royal Society of Arts, at 5 P.M.

Institution of Civil Engineers: Paper, entitled "The Rangoon River Training Works," by Sir G. Cunningham Buchanan, C.I.E., M.Inst.C.E., at 5.30 P.M.

Egypt Exploration Fund: Paper, entitled "Animal Worship in Ancient Egypt," by Miss Emily Paterson, at the rooms of the Royal Society, Burlington House, W., at 4.30 P.M.

Wednesday, March 22.

Royal Society of Arts: Paper, entitled "The England of Shakespeare," by Rev. P. H. Ditchfield, at 4.30 P.M.

Carpenters' Hall: Lecture, entitled "Landscape Painting," by Mr. H. Hughes-Stanton, A.R.A., at 7.45 P.M.

Thursday, March 23.

British Museum: University Extension Lecture XXIII. on "Byzantine Architecture (A.D. 324 onwards)," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

BRITISH COLUMBIA TIMBER.

ALTHOUGH some architects' specifications in this country may still repeat the old formula demanding the "best Memel, Dantzic or Riga" timber, it is now a matter of common knowledge that good-class timber of scantling size from Scandinavian or Baltic ports is practically unobtainable—apart altogether from the temporary effects of war. It is necessary, therefore, for architects and builders to look for other sources of supply, and fortunately such exist within the British Empire. During recent years the practice has been for builders to supply and architects to permit the use of pitch pine in substitution for the "best Memel, Dantzic or Riga," but this material requires special care in its employment in buildings, and at its best is not on a par with Baltic fir for durability.

The Pacific coast of North America, of which British Columbia holds a very considerable share, is at the present time the world's greatest storehouse of softwood timber, and the capabilities of that part of the Dominion of Canada are particularly worthy of consideration. Hardwoods rarely occur in the Pacific forests in commercial quantities and circumstances.

The most important trees in these forests are Douglas fir, Western hemlock, Western red cedar, Sitka spruce, Western white pine, Western larch, Mountain Western pine, redwood, and sugar pine, all of which except redwood (sequoia) and sugar pine are found and reach prime development in British Columbia.

For use in Great Britain it is sufficiently obvious that the keen competition existing between exports from Eastern North America and from Northern Europe with those from British Columbia limits the commercial possibilities of the latter in this country to those that can be exported by water, that is from the coast forests. Four species—Douglas fir, Western red cedar, Western hemlock, and Sitka or silver spruce—make up the bulk of the coast timber, and therefore of the exports by water.

Douglas fir (Pseudotsuga taxifolia) is also known as red fir, yellow fir, Oregon pine, Columbia pine, and Douglas spruce, and is the most important timber tree on the North American continent. It is found from northern British Columbia to Mexico, covering a range of over one million square miles, and reaches its best development on the coast of southern British Columbia. As a timber tree it is notable for its size, which exceeds that of any other except the Californian sequoia. The average height is 150 to 225 feet, with a diameter of 3 to 6 feet. Exceptional trees reach over 300 feet in height and 15 feet in diameter. As a building wood it is, on the average, about equal in strength to pitch pine, size for size, but is about 20 per cent. lighter. It is moderately hard, but easy to work, straight grained, tough, resilient, and durable. It varies in texture and colour from a fairly soft, fine-grained straw-yellow in narrow-ringed, slow-grown trees, to a harder, coarse-grained reddish-brown in fast-grown timber. It possesses decorative value to such an extent that it is frequently cut into veneers, for when sawed tangentially the grain of the wood is shown in a most beautiful figuring, which makes it very attractive and widely used for interior finish of every description.

Western hemlock (Tsuga heterophylla) is also known as gray fir, Alaska spruce, Western hemlock fir, Western hemlock spruce, hemlock spruce, and Prince Albert fir. Hemlocks are found only in Asia and North America, and of the three species in the former continent and the four in the latter Western hemlock holds first place in point of size and yields much the best timber. Mature trees average 125 to 150 feet in height and 2 to 5 feet in diameter. Occasional trees are 250 feet high and 8 feet in diameter. The wood is light, fairly soft, tough, straight-grained, not splintery, odourless and tasteless. It contains no pitch or resin and is usually light in colour, but often reddish-brown in the interior of the tree. It has about 88 per cent. of the strength of Douglas fir and averages about one pound per cubic foot less in weight. It may be regarded as slightly inferior to Douglas fir, but useful for all ordinary building purposes. When suitably sawn it shows a very handsome figure or pattern, and therefore is largely used for interior finishings.

Western red cedar (Thuja plicata) is by far the biggest of the four true cedars, two of which are found in Asia and two in America, and is also called giant cedar, arborvitae, Pacific red cedar, canoe cedar (because from it the Indians of the Pacific coast hollowed out their great war canoes), Western cedar, shingle cedar. The use of this wood for the Indian war canoes and for roofing shingles, as well as its name arborvitae, give the clue to one of its dominant characteristics, durability and resistance to decay, even under the most severe conditions. It is also exceptionally light, soft, and of close, straight grain, making it easy to handle and work, and rendering it remarkably free from warping, shrinking, or swelling. The narrow sapwood is white. The heartwood in mature years is generally a brownish-red (occasionally a light yellow) which ages to a deeper and richer

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shade, with a silvery sheen which is very attractive. The wood has a slight aroma, pleasing and permanent, but is perfectly free from resin. This makes it especially suitable and popular for moth-proof clothes chests, cupboards, drawers, &c., and hence cabinet makers use it for many purposes.

Sitka spruce (Picea sitchensis) also called giant spruce, silver spruce, tideland spruce, and Alaska spruce, is the giant of the eighteen species of spruce; mature trees average 150 feet in height and 4 feet in diameter, while some trees grow to over 200 feet in height and 10 to 15 feet in diameter. The wood varies in colour from white to a white tinged with very light brown, is soft and light, but tough and very strong for its weight. It is even grained, long-fibred, easily worked, non-resinous, odourless, tasteless, flexible, and resonant. It does not warp or split, and therefore makes an excellent core or base for veneered work, drawer bottoms and panels. While not as strong or suitable for heavy structural work as Douglas fir, it is well adapted for many uses in building, such as framing, shelving, panelling, and sub-flooring, and where such qualities as ease of working and painting, or light weight and ability to take and hold nails, are demanded. In aeroplane construction, it has proved itself superior to any other wood, and large quantities are now being used to maintain the air service of the Allies in the present war.

Thus we see that in these four timbers alone we have within the British Empire satisfactory substitutes for the soft woods we have hitherto obtained from northern Europe. Of the amplitude of the supply available it is sufficient to say that the standing merchantable timber in British Columbia is estimated to reach the enormous total of four hundred thousand million (400,000,000,000) feet board measure, the present amount of which annually cut is one and a half thousand million feet.

We have confined ourselves to a consideration of the readily marketable timbers of British Columbia from a building trade point of view, but there are many other uses, particularly that of pulp-making, for which they are eminently suitable, the effect of which is that a market is readily found for such timber as is not good enough for building, and so this trade is saved from having to pay for the wastage in conversion that would otherwise fall upon it.

NOTES AND COMMENTS.

THE Dublin Corporation, in spite of the deterrent action of the Treasury, is still bravely struggling with the undoubtedly serious condition of housing in their city. At a special meeting a resolution has been adopted dealing with the first reading of three reports—one recommending the variation of the resolution of the Council of October 4, 1915, respecting the £8,000 voted for housing purposes; the second in reference to the proposed improvement scheme for the North Lotts area under Part III. of the Housing of the Working Classes Act, 1890, and the Housing of the Working Classes Act, 1908; and the third report referring to the proposed improvement scheme for the Newfoundland Street area, under Part I. of the Housing of the Working Classes Act, 1890, and the Act of 1908. A similar resolution was moved at a special meeting of the Corporation, held on February 25, but was defeated by the casting vote of the Lord Mayor.

The report of the Housing Committee submitted to the special meeting states that the "North Lotts" area was first brought to their notice some twelve months ago in connection with an offer by the owner to sell to the Corporation. The area proposed to be dealt with there contains about 15¼ acres. After giving careful consideration to the documents placed before them, they decided to promote a scheme of dwellings under Part III. of the Housing of the Working Classes Act, 1890. The City Architect proposes to divide the scheme into three sections. The first section will contain one hundred and thirty-two four-roomed houses, forty-nine three-roomed houses, and twenty two-roomed cottages. The second section will contain one hundred and twenty-eight four-roomed houses, fifty-nine three-roomed houses, and fifty-eight two-roomed cottages. The third section will contain sixty-four four-roomed houses, thirteen three-roomed houses, and fourteen two-roomed cottages. The estimated cost is £134,294.

The Newfoundland Street scheme is also to be divided into three sections. The first or western section will contain eight five-roomed houses, seventy-three three-roomed houses, and forty-four two-roomed cottages. The three-roomed houses and the two-roomed cottages will be similar to those in course of construction on the Church Street area. The five-roomed houses will be a new type. The second or central section will contain sixty-one four-roomed houses similar to the four-roomed houses in course of construction on the Church Street area. The third or eastern section will contain eleven five-roomed houses, ninety-nine three-roomed houses, and sixty-eight two-roomed cottages. The three-roomed houses and the two-roomed cottages will be similar to those now in course of erection on the Church Street area. The five-roomed houses will be a new type. The estimated cost is £85,487.

Sheffield is taking advantage of the favourable views of the Ministry of Munitions towards its housing schemes to provide not only for munition workers, but for the working classes generally.

The Wincobank scheme for the housing of munition workers has received the further consideration of the Estates Emergency Sub-committee, and the City Council are to be recommended to make application to the Local Government Board for their sanction to the borrowing of the sum of £69,200 for the purpose of erecting 261 houses on the High Wincobank Estate, in accordance with the scheme approved by the Ministry of Munitions. The application is to be made subject to and in accordance with the following conditions:—

1. The Ministry of Munitions have agreed to contribute 20 per cent. of the total cost of the proposed buildings, including the cost of streets and sewers, such total cost being estimated at £86,500—namely, £75,000 for buildings and £11,500 for streets and sewers.

2. It is agreed that the cost of the scheme, less the Government's contribution of 20 per cent. as aforesaid, will be advanced by the Government to the Corporation as and when payments in respect thereof shall fall due, and that the amounts so advanced will be repaid by the Corporation with interest at the rate of 4½ per cent. per annum on the annuity principle, over a period of 60 years in respect of the buildings and 22 years in respect of streets and sewers.

3. The houses shall during the period of the War be available for munition workers employed at the national projectile factories in Sheffield or at other works engaged in the manufacture of munitions of war, and such workers shall during the same period have prior claim to occupy the houses as tenants and lodgers.

4. The houses shall be completed fit for occupation as to 120 in three months after January 17 last, as to 80 additional in 4½ months from the same date, and as to the balance of 61 by July 31, 1916. Provided that if any delay occurs which is certified by the City Architect to be due to causes outside the control of the Corporation, the contribution of 20 per cent. as aforesaid by the Ministry of Munitions shall not be reduced or withheld on account of such delay.

An interesting report issued by a special committee appointed to consider the building by-laws of the city will also be placed before the Council. The Sheffield Society of Architects and Surveyors, and the Master Builders' Association and the Corporation officials have made reports to the committee on the matter, with the result that the Council are to be asked to agree to by-laws being altered for the period of the War and for two years afterwards, in view of the high price of building materials and

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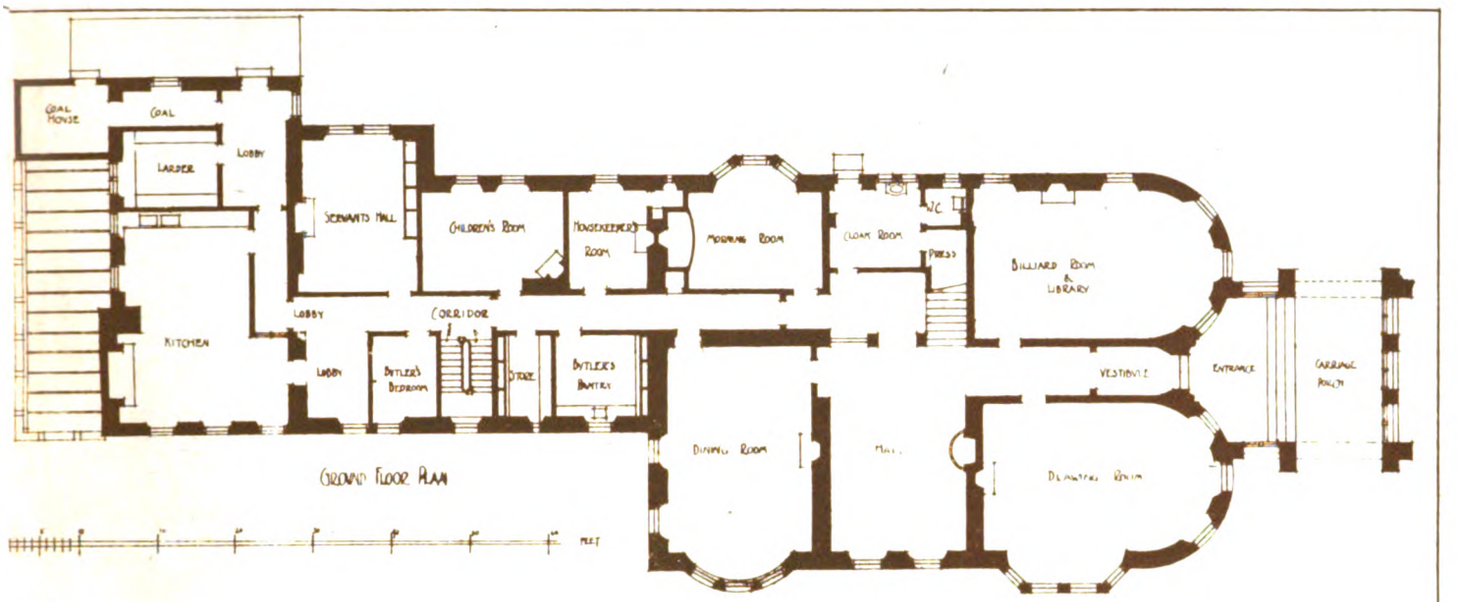




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the increased cost of labour, and with the object of encouraging the building of cottage property in the city.

The committee point out that they are advised that economies in the building of cottage property can be made by omitting cellars and substituting pantries and coal-houses on or near the ground floor level; by the use of reinforced concrete walls in accordance with by-laws; by advantage being taken of by-law relating to the height of rooms, which permits rooms on the first floor to be 7 feet 6 inches at the eaves; and by the use of asbestos tiles for roof covering instead of slates in accordance with by-laws.

The education of the general public in matters relating to architecture and building should be part of the duty of all non-technical journals, and so we are pleased to see in the "Glasgow Herald" a clearly written article explaining the systems most generally in vogue for the central heating and ventilation of buildings.

A popular delusion with regard to the relative position of regular and secular clergy in the Middle Ages was well pointed out by Mr. Francis C. Eeles in a lecture delivered under the auspices of the Edinburgh and South-East Branch of the Historical Association of Scotland on "The Constitution of the Great Mediæval Churches, with special reference to the Monastic Church of Holyrood." It was pointed out in the paper that there was nothing more common than the idea that every big mediæval church was served by monks. If they listened to the conversation of the average group of visitors who were looking round Glasgow Cathedral or Dryburgh Abbey, or even St. Giles', Edinburgh, or the parish churches of Stirling or Perth, they would hear them talking glibly of the monks or friars who used to minister in them. As a matter of sober, historic fact, neither monks nor friars had anything to do with any of them. Except Dryburgh, all these churches were served by ordinary clergymen, who were not under monastic vows and not members of any religious order. Not a single Scottish cathedral was served by monks, and not one of the great mediæval churches, on the scale of Holyrood, Paisley, or Pluscarden, had any connection with the friars. It was important to all students of history to realise that, and to obtain a clear understanding of the nature of the ecclesiastical corporations who possessed the great churches of the Middle Ages, and who exercised an enormous influence upon the whole life of the time. The paper described the general nature of the constitutions of the mediæval churches, the distinction between regular and secular clergy, the nature of a Cathedral Chapter, and the difference between the various religious orders. Holyrood was chosen for description in detail.

We may join in the general regret that the British public will not have an opportunity of seeing before they leave this country the paintings for the mural decoration of the Boston Public Library by Mr. J. S. Sargent. We may be sure, however, that they will be worthy to rank alongside not only Mr. Sargent's work which is already part of the cherished possessions of Boston's famous library, but with the work of Puvis de Chavannes, which antedated that of Mr. Sargent.

At a meeting of the London and Middlesex Archæological Society, held at the Bishopsgate Institute, Mr. Montagu Sharpe read a paper on the passage of Julius Cæsar in B.C. 54 and that of Claudius Cæsar in A.D. 43 across the great ford of the lower Thames. The place where Julius Cæsar crossed the river, he said, had been settled by the recent discovery of the remains of an extensive palisade work in the Brentford reach of the river, where in past times the well-known ford existed. There were three facts to bear in mind in assigning Brentford as the point of crossing. It was eighty miles from Deal, as mentioned in Cæsar's writings; it was the boundary of the territory of Cassivelaunus, and there was the evidence of the stakes found on the bank and in the bed of the river. In speaking of the passage of Claudius Cæsar he said that the Roman army could not cross the river at Westminster, and was compelled to use the other ford at Brentford. Dr. Tyson, who seconded a vote of thanks to the lecturer, said that one point against Brentford was that there was nothing in Cæsar's history to suggest that the river was tidal where he crossed it; another was that stakes were very common in all rivers to prevent the erosion of the banks, and it was hardly likely that the Britons, having so little time to protect themselves, would have put up such a substantial defence.

In a lecture at the Royal Institution on "Recent Excavations in Mesopotamia," Professor W. L. King, Assistant Keeper of Egyptian and Assyrian Antiquities in the British Museum, dealt specially with Babylon. In recent excavations, he said, portions of the older city had come to light, and it was shown that as early as the second millennium B.C. the streets were carefully laid out, the main thoroughfares running straight through and parallel to the river, and the others crossing them at right angles. We had in Babylon recovered what was undoubtedly the earliest attempt at town-planning on scientific lines. It was only when we came to the Babylon of Nebuchadnezzar and his successors that we found traces of any building of a public character, and here the excavators had had some striking successes and one equally striking failure. They had recovered and identified Babylon's great temple, the throne of Marduk, the city god, close to the old foundations of the temple tower, the original of the Tower of Babel. They had found the gate of Ishtar, which spanned Babylon's sacred way. They had recovered Nebuchadnezzar's palace, and it was possible now for anyone to stand in the ruins of the throne-room and note the recess in the wall in which the throne was placed or tread the endless corridors and chambers of the palace. It was in this area that the excavators made their one great failure—their proposed identification of the hanging gardens of Babylon. The descriptions left by classical writers suggested that these royal gardens towered on high above the surrounding buildings, and it had been suggested now that they lay in the north-east corner of the palace, supported by massive vaulting, but lying deep below the palace level. On this theory the gardens would have formed a sort of sunken courtyard, rather like some of our modern winter gardens. Such a construction could have caused little wonder, and it seemed more probable that the subterranean building was simply a palace granary.

ILLUSTRATIONS.

KINPURNIE CASTLE, FORFARSHIRE.

THIS large residence, built for Sir Charles W. Cayzer, Bart., occupies a commanding site on Auchtertyre Hill, near the village of Newtyle, from which an extensive view is obtained of Strathmore and the lower range of the Grampians. Some distance to the east of the house there have been erected stables, garage, chauffeur's house, and walled garden, while there is an entrance lodge and gateway at the main road. The precincts have been planted mainly with fir-trees, and some finer trees and flowering shrubs near the house.

The buildings are of stone, mainly quarried on the site, and covered with rough-cast. The roofs are slated with Precelly green slates. As regards the internal treatment, the public rooms have ornamental plaster ceilings supplied by the Bromsgrove Guild, and the hall and staircase are panelled in oak.

The work was carried out to the designs and under the superintendence of Messrs. Thoms & Wilkie, FF.R.I.B.A. Among the contractors were the following Dundee firms: William Bennet, masonry; W. & R. Brownlee, joiner work; Methuen, Hyslop & Co., oak panelling; David Brown, plumber work; Alexander

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McRitchie, plaster work; Lindsay & Scott, glazier work. The remaining contractors were: Bowie, Fisher & Co., Glasgow, painting; James Boyd & Son, Paisley, heating; and the slating and rough-casting work was carried out by Mr. Charles Crichton, Neigle.

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Our illustrations of these well-known architectural masterpieces are reduced from fine, large-size etchings by Mr. Albany E. Howarth, with the permission of the artist, Messrs. Dowdeswell & Dowdeswells, the publishers, and the Royal Society of Painter-Etchers and Engravers, in whose exhibition they were shown.

KILDONAN MANSION, AYRSHIRE.

This house, which was designed by Mr. James Miller, A.R.S.A., F.R.I.B.A., is the property of Captain D. E. Wallace. It is situated on the River Dusk, on the beautifully wooded site of the old mansion, which has been removed, although the old trees and ornamental grounds have been retained as nearly as possible in their original condition.

The walls are of Northumberland freestone, of a cream shade, and the roofs are slated with large Caithness slabs. At the west front a loggia has been formed, in close proximity to the service-room, so that meals can be served outside when the weather is favourable. The south and west fronts are laid out as rose gardens, the terraces being on different levels. A tennis court forms part of the scheme.

Dealing with the internal treatment, the hall, which extends through two floors, is planned more or less as a sitting-room, and is panelled in oak up to a height of 12 feet. Above this the walls are lined internally with Nailsworth stone. A feature at one end of the hall will be an oak staircase; while at the opposite end will be a large stone chimneypiece extending to the ceiling. The walls of the smoking-, sitting-, and dining-rooms are panelled in hardwood, with ornamental plaster ceilings in low relief.

The contractors are Messrs. J. & D. Meikle, of Ayr.

BLANEFIELD, KIRKOSWALD.

This house, the property of Mr. J. R. Richmond, is situated on an elevated site in the parish of Kirkoswald. The main rooms command a fine view of the surrounding country and the lower reaches of the Firth of Clyde, being due west from the island of Ailsa Craig, which can be seen from the windows of the upper rooms.

Externally, the building is treated with cream-coloured freestone, parts being rough-cast by way of contrast. The roofs are slated with slates of varied tints, ranging from green to dark blue. The front is laid out as a terrace-garden, with stone-paved walks, the terrace being connected with the gardens by a brick-and-timber pergola. The inside walls of the open porch are framed with oak quartering, rough from the saw, filled in with herring-boned thin bricks of a deep purple-red tone. The floors of the porch and vestibule are laid with Hoptonwood stone, with panels of thin brick laid on edge.

As regards the interior, the entrance hall is panelled with oak up to ceiling height, the remainder of the finishings being pine, painted to suit the decorative schemes of the various rooms. The drawing-room is finished in a tone of grey, the woodwork being French grey, with the mouldings brought out in white.

The building is heated from a central heating apparatus, and electric light has been installed.

Mr. James Miller, A.R.S.A., F.R.I.B.A., was the architect.

The contractors were: Messrs. J. & D. Mickle, Ayr, for masonry work; Mr. G. P. Bankart, London, and Messrs. Geo. Rome & Co., Ltd., Glasgow, plaster work; Messrs. G. N. Haden & Sons, Trowbridge, heating; Messrs. Smith & Wellstood, Bonnybridge, grates. The other firms, all of Glasgow, were: Messrs. Fergusson & Anderson, who did the carpentry and joinery work; Mr. A. Mackenzie Ross, slating; Messrs. W. Anderson, Ltd., plumbing; Mr. J. B. Meiklejohn, electric fittings; Messrs. Bowie Fisher & Co., painting; and Messrs. John Brydon & Sons, blinds.

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—XI.

By Charles T. Ruthen, Licentiate R.I.B.A., M.S.A.

Continuing the walk through the streets of Milan, quite a number of noted edifices are passed, and turning into the Corso di Porta Ticinese containing a large colonnade of sixteen Corinthian columns, perhaps the most interesting and important remains of the Roman Mediolanum, the famous church of San Lorenzo is reached. This is the oldest church in the city, and as previously mentioned, one of the few to survive the wholesale destruction of 1162.

San Lorenzo was erected on the ruins of a Roman building in 451, so it is recorded. In the sixth century, it is further set down that this church was rebuilt, due to the power exercised by San Vitale in Ravenna and St. Sophia in Constantinople.

After having been extensively damaged by fire in 1071 it was rebuilt, and in 1573 Martino Bassi, it is written, rebuilt the edifice or practically so.

Its form is octagonal and it is surmounted by a large dome. On four of the sides are large semi-circular, two storeyed apses carried by columns, alternately octagonal and round, four to each side.

Other points of interest are an ancient Christian sarcophagus, the Cappella di Sant' Aquilino, and the Cappella di Sant' Ippolito, two very curious fifth century structures. In the Piazza San Eustorgio stands the basilica convent church of Sant' Eustorgio, which was founded in the fourth century, reconstructed in the late thirteenth century in the Gothic style, considerably altered by Ricchini in the seventeenth century, and again in the nineteenth century restored to its original style.

The façade is modern, ascribed to Giovanni Brocca (nineteenth century). This church occupies a site at the junction of the Corso di Porta Ticinese and the Via Santa Croce, in which latter street rises the brick Portinari Chapel.

There is quite a fund of special interest in this quaint old fabric, amongst which are a number of interesting monuments, and in the Cappella dei Magi exists a late Roman sarcophagus in which used to rest the bones of Magi until Barbarossa presented these relics to the city of Cologne in 1164.

The bones of the three fourth-century archbishops of Milan are now resting in a sarcophagus of 1900 date.

The Cappella Portinari before mentioned is of unusual note. This has a frieze of angels and a nice cupola. This little chapel was built in the fifteenth century by Michelozzo (who, with Filorete, was responsible in the latter half of the fifteenth century for the introduction into Tuscany of the early Renaissance style) for Pigello Portinari, for whom, in 1456, the Casa Vismara at Via Bossi 4 was built from the designs of Michael Angelo. Portinari was the agent of Cosimo the Elder, the founder of the Medici dynasty of Florence.

In the Corso San Celso stands the Renaissance structure Santa Maria presso San Celso, by Dolcebuono (a pupil of Bramante), and others, a fifteenth-century edifice possessing an elaborate sixteenth-century marble facade.

Adjoining is the Romanesque San Celso Church, of which little remains of the early building, spared by Barbarossa.

Close by, in the Piazza Sant Eufemia, rises a church of that name, which originally was erected in the fifth century, and has passed through many periods of restorations and rebuildings up to as late as 1870.

Again, in the same Piazza stands the highly decorated church of San Paolo, dating from the middle of the

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KILDONAN MANSION, BURRHILL, AYRSHIRE.

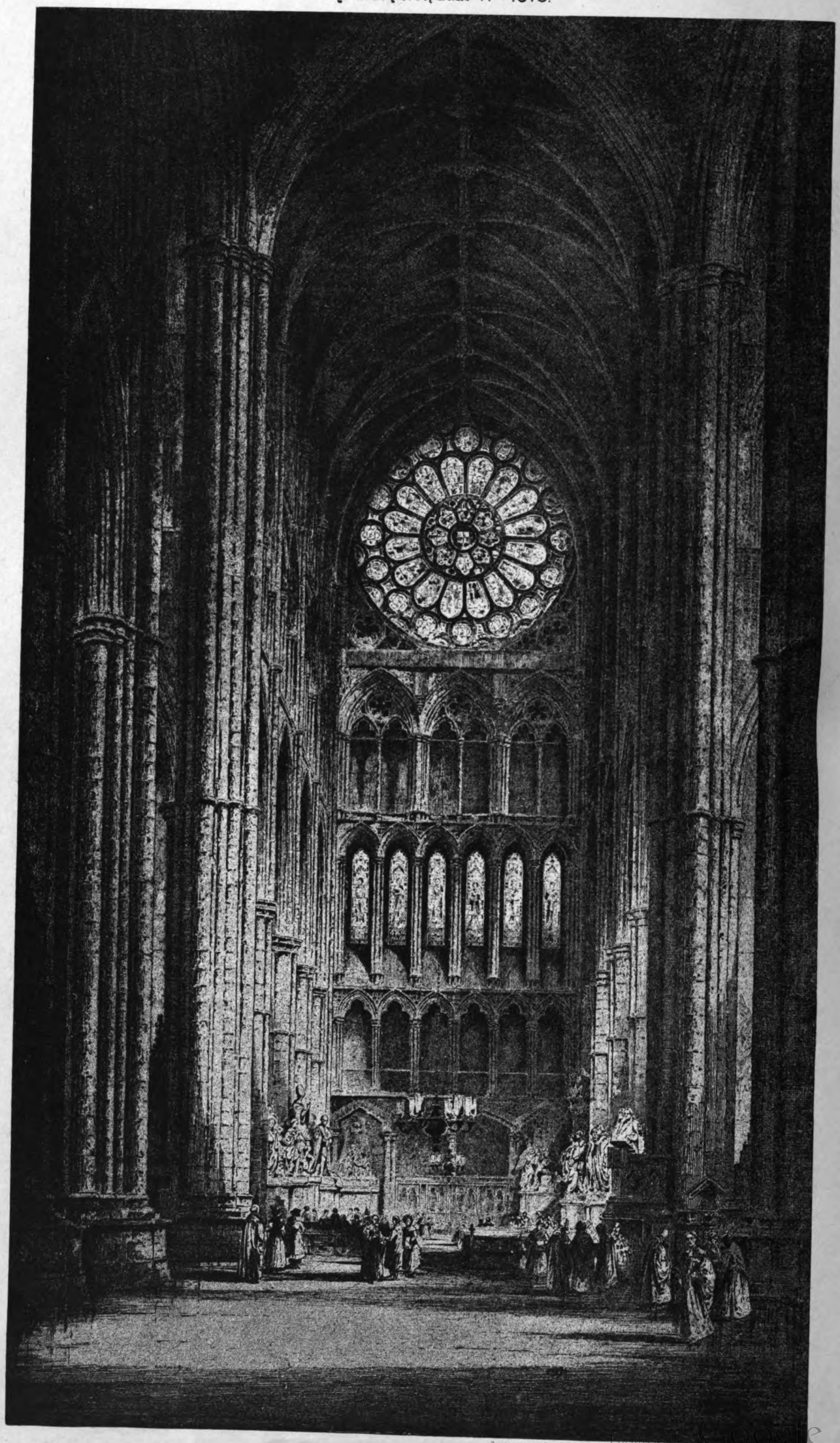
Mr. JAMES MILLER, A.R.S.A., F.R.I.B.A., Architect.

(Royal Scottish Academy, 1915.)

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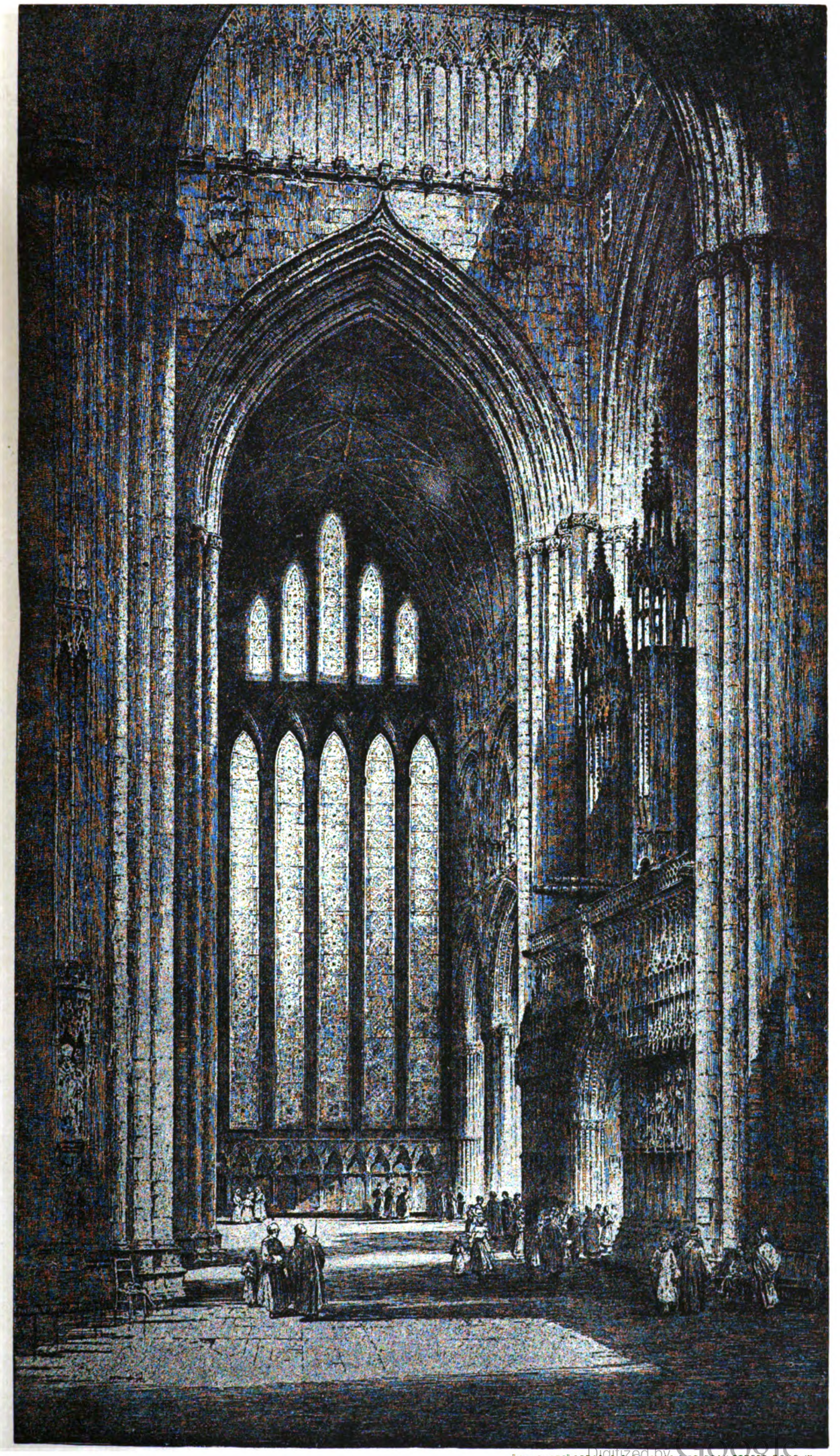
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BLANEFIELD, KIRKOSWALD, AYRSHIRE.

MR. JAMES MILLER, A.R.S.A., F.R.I.B.A., Architect.

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sixteenth century, the interior being decorated with frescoes by the three brothers Campi.

There are, amongst the many other buildings, that great and notable structure the Palazzo Trivúlzio, containing valuable art collections; the churches of Sant' Alessandro (early seventeenth century); San Nazaro, supposed to have been established in the fourth century; and the Ospedale Maggiore, a municipal hospital founded in 1456 by one of the Sforzas, a huge brick edifice 935 feet long and 395 feet wide; besides a number of other famous and fine buildings.

Milan and all its wonderful attractions must be deserted for the continuation of the journey in an easterly direction, for there are still more interesting fields for the mind of the architectural traveller.

Taking the train from Milan with Verona as the objective, the route selected is via Brescia.

After crossing the Adda with its sparkling blue waters, and passing through Treviglio and sundry other places of not very particular note, Brescia is reached, some 51 miles from Milan.

Brescia is a fair-sized town with a population of about 45,000, beautifully situate at the base of the Colle Cidneo and the Ronchi, sprinkled with villas and luxuriant gardens.

The Colle Cidneo, named the Castle-hill, is surmounted by a Castello. Both these hills are of the Brescian Alps. Brescia was the capital of the Celtic Cenomani from the sixth century, and afterwards became a Roman colony, and was known as Colonia Augusta Civica. Following the tumult of the barbaric invasions, this place regained most of its prosperity and became the seat of the Lombard Dukes.

After becoming an active member of the league of Lombard towns in the latter half of the twelfth century, it was unsuccessfully besieged in the first half of the thirteenth century by Emperor Frederick II. Twenty years later, however, Ezzelino da Romano, of the Ghibelline family of the Eccelini, conquered the place. In the early part of the fourteenth century, after the town had been largely devastated, Emperor Henry VII. took the town.

Some twenty years later the town was taken over by the Scaliger Mastino II., who conquered Brescia, Parma, and Lucca, and some eight years afterwards the Visconti took over the town, which in the early fifteenth century passed to Venice.

Under the rule of Venice this town increased rapidly in prosperity, in fact came next to Verona in this respect.

Not many years were allowed to elapse before Brescia was defending itself against the Milanese army under Piccinino, and after a period of comparative rest this town was the centre of a fierce struggle against the French under Gaston de Foix in 1512, by whom it was sacked and burned.

Although Brescia was a few years later again taken over by Venice, by whom it was ruled for more than two and a half centuries, yet its ancient prosperity was never regained. So through the centuries this little place, like so many others in Northern Italy played a very prominent part in the early struggles and history of Italy.

Brescia occupies an important place in the history of art of Italy, and possesses three very fine examples of the early Renaissance style, in the Monte di Pietá, the Madonna dei Miracoli, and the Municipio.

Passing onwards after leaving Rezzalo, the railway line crosses a long viaduct and thereby provides a distant view of the beautiful Lago di Garda, the greatest of the North Italian lakes. Lake Garda is thirty-two miles long, 143 square miles in area, and over ten miles wide at the south extremity. A small portion of the narrow north end with Riva and Torbóle belongs to Austria, and the remainder of the lake belongs to Italy.

The east bank of the lake is separated from the Adige valley by the Monte Baldo, a range twenty-four miles long, terminating to the south-west in the Monte Luppia, and the cape of San Vigilio.

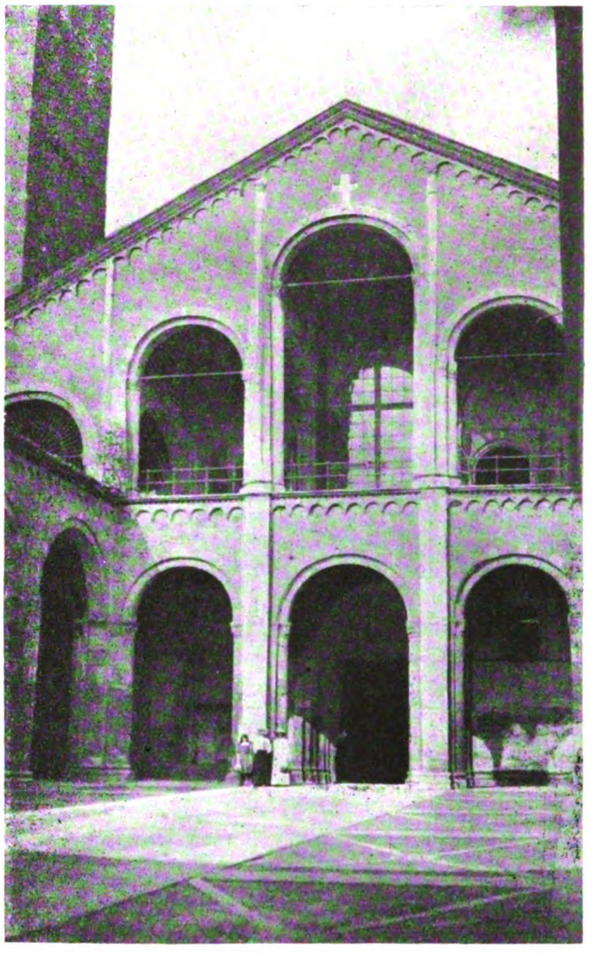
The Monte Baldo is an interesting range reaching to a height of 7,270 feet.

Desenzano on Lake Garda is passed, and after traversing the Lugana to Preschiera sul Garda and thence through several small villages and crossing the Adige, Verona Porta Vescova is reached, after a continuous journey of ninety-three miles from Milan or just under 2¼ hours in an express train.

Here in Verona there is attached a wonderful history brim full of epoch-making incidents.

Venetia, the north-eastern part of Italy, named Il Véneto, is, as in the case of Lombardy, divided into eight provinces—Verona, Vicenza, Padova, Rovigo, Venezia, Treviso, Belluno, and Udine. The area of these eight provinces is somewhat larger than Lombardy.

The history has, unlike that of Lombardy, been influenced greatly by its association with and proximity to the sea.



SAN AMBROGIO, MILAN.

As a study of the map will disclose, the strange formation of the sea-coast line of this part of the country has much to do with its stirring history.

From Marecchia, near Rimini, to the mouth of the Isonzo, stretches a wide curve, enclosing the north Adriatic delta and forming a huge alluvial area, bordered on the sea coast by a strip of land nine to twelve miles broad, broken at points by numerous lagoons, and in ancient times covered with pine forests.

The river Po, in the fertile plain on the left bank of which lies the great town of Turin (Italian, Torino), the headquarters of the 1st Italian Army Corps, with its university founded in 1404 and its military academy, passes through the plain bordered on the north west by the Graian Alps, on the south-west by the Cottian Alps, and on the east by the Colli Torinesi.

As with the Adige and Brenta and other rivers in this vicinity, the Po brings down great quantities of

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alluvial deposits, such deposits being distributed along the coast by the prevailing north-east and north winds, and in this manner the very extensive lagoons are formed.

These lagoons are separated from the sea by narrow strips of land called "lidi," and are connected with the sea by narrow channels or outlets, called "porti." The huge area before mentioned in many ways resembles Holland, stretching as it does for miles in every direction, and controlled in certain portions by the erection of dykes.

It was owing to the proximity of these sea-coast areas that Verona partook of more than its share of the struggles in past ages, when cities and towns were seemingly destroyed with great regularity.

Verona, like many other great cities of Italy, has an ancestry of great antiquity; its origin, like that of so many other cities in this wonderful country, is deeply hidden in the far distant past. Although there appears



SAN EUSTORGIO, MILAN.

to be no certainty as to its foundation, or as to the peoples who first were its founders, yet Veronese writers claim the fourth century before the Christian era as the probable period when this city was first founded.

It is claimed by some authorities that Verona was founded by the Rhætians and Euganeans, and afterwards taken over by the Celtic Cenomani, and in 89 B.C. became a Roman colony.

After passing through troublous centuries, Verona, after 1164, headed the league of Venetian cities against Frederick Barbarossa, and during the great struggles between the Guelphs and Ghibellines, Ezzelino da Romano, known as "the Terrible," and previously mentioned in connection with Brescia, occupied Verona in 1227.

It is just here, in dealing with olden historical events, that there is forced irresistibly upon one's mind the making of a comparison between Barbarossa and Ezzelino, the twelfth-century destructive warrior, and the thirteenth-century blood-thirsty tyrant on the one hand, and their imitators of the twentieth century on the other hand.

It cannot be said with any degree of truth that Barbarossa, in his march of destruction, was by any means generous in his behaviour towards religious edifices; but it can safely be held that Barbarossa and his assistants, had they lived until to-day, would have learned much in this particular direction from the Huns and their helpmates. Kultur and its exponents were evidently not so well versed in the art of frightfulness in the twelfth century, as they are in the present century.

The disciples of this doctrine have shown, in the destruction of sacred edifices and works of art, as exemplified in their eminently successful efforts in Belgium and Northern France and elsewhere, that they have certainly nothing to learn from their twelfth-century patterns.

But of Ezzelino it must be admitted he was a master in tyranny and diabolical behaviour of the most superfine nature. In reading the records of this amazing monster one must be pardoned for turning one's thoughts to the doings of the present time, the enlightened, highly civilised twentieth-century, the Christian epoch.

Mgr. Carton de Wiart, Belgian Minister of Justice, in a prefatorial letter written to "The Barbarians in Belgium," a little book upon the martyrdom of a people, by Pierre Nothomb, says, among other things: "By thousands the non-combatants, and among them priests, old men, women and children, have been shot or tortured. Others have been sent in thousands to Prussia. For no strategic reason undefended cities have been bombarded. Celebrated sanctuaries and charitable establishments, marvels of art, have been destroyed, and this pillage has been organised on a vast scale, like some huge enterprise. It is no more war than an assassination is a duel. It is a terrible accumulation of crimes against the common law of humanity, a succession of horrible atrocities."

These deeply impressive and heart-searching words refer to the early days of the great war now waging, during the German invasion of Belgium in the early days of August 1914 and on.

In reading of the horrible atrocities committed by the German hordes in the early days of the present great world struggle one is inclined to wonder whether the hands of the clock of civilisation have for some inscrutable reason been turned back. But that cannot be, for these latest deeds were perpetrated in the name of Kultur, with the cry of "Gott mit uns," and by the race claiming to be the most highly civilised and cultured race now occupying the earth.

It must therefore be left to be unravelled by a Higher Mind, for to attempt to explain such doings is certainly beyond the comprehension of the human intellect.

One reads that Ezzelino da Romano, Lord of Verona, this highly civilised and cultured gentleman, with the most unenviable record of all the tyrants of the Middle Ages, certainly not equalled until the pages of history covering the period commencing in the early days of August 1914 were written in blood, "was the cruellest and most redoubtable tyrant that ever existed among Christians."

Perhaps, it seems strange to say, there is one thing to be placed to the credit of Ezzelino, and that is that at least he did not claim the Almighty as his ally, as does his counterpart of the twentieth century.

After the frightful days following the invasion of Belgium, a German professor named Lasson wrote a letter (November 1914) containing the following passages, viz.:—

"Germany has taught the world that it is possible to direct public affairs honestly, and to make war loyally.

"Our army is, so to speak, typical of the intelligence and morality of the German people.

"We have nothing to apologise for. We are not a violent people. We do good to everyone.

"Our strength is the strength of intellect, and our victory that of mind over matter.

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"We are truthful. Our chief characteristics are humanity, kindness, honesty, and the Christian virtues. In this wicked world we represent love, and God is with us."

What is one to think of civilisation after such a letter?

When reading of the exploits of the tyrant Ezzelino in the thirteenth century, where it is recorded that "he made short work of his foes in Verona, and in other towns, their houses were demolished and the people tortured and killed," one might almost be reading an account of the destruction of Dinant, Termonde, or Louvain, or some other Belgian city in the twentieth century.

Dante places him in Hell in "Bolgia" among the "tyrants who delighted in blood and gave themselves thereto."

In the early part of the latter half of the thirteenth century, after the last-named tyrant's death, Mastino della Scala, a Ghibelline, was elected Podesta. This incident brought into power the Scaligers, the princes of



A STREET IN VERONA.

the house of Mastino della Scala, and with it the period of the greatest prosperity of Verona.

During the reign of the Scalas as Lords of Verona, the city sprang into prominence, and its artistic history centres round these years.

Mastino unfortunately did not himself rule long. He was assassinated in 1277, but his brother Albert followed him and ruled from 1277 to 1301. Bartolomeo (Albert's son) followed for three years only. It is said that Romeo and Juliet lived and died in this latter reign, and that Dante took refuge in Verona when banished from Florence in the same period.

Alboino followed (Albert's son), and then the greatest member of this famous family, Can Francesco or Can Grande I., 1312-29. This ruling prince was the greatest of his age; he was a fine soldier, fond of learning and of fine arts, and possessed great virtues. So during a period of some 128 years the Scaligers ruled Verona, the most important period in its long history.

In 1404 Padua took the town and the following year it was taken by the Venetians, and 35 years after by the Milanese and by the Emperor Maximilian I., in the early part of the sixteenth century. The beautiful column of white Veronese marble that stands at the northern end of the Piazza delle Erbe was erected in 1523 to commemorate the restoration of Verona to Venetian rule, and the year following the winged lion was placed on the top of the column.

Around Verona new walls and bastions were built by the Venetians in 1527, who, realising the troubles through which the town had passed in the ages gone by, were determined to provide against dangers in the future. All or nearly all the old towers were demolished and new ones erected with bastions and moats, and all the best-known appliances for the making of the place impregnable. Various entrances were also made into the town under the direction of Michele San Micheli, one of Italy's greatest architects.

Thus between 1520 and 1557 Porta Nuova, Porta Palio, Porta Vescovo, Porta San Zeno, and Porta S. Giorgio were erected.

(To be continued.)

THE EFFECTS OF WAR ON ART.*

By W. R. COLTON, A.R.A.

I THINK I cannot do better than to take for the text of my discourse a quotation from Ruskin's "Crown of Wild Olives," which we have probably all read and most of us forgotten in the many years of peace.

"All the pure and noble arts of peace are founded on war. No great art ever yet rose on earth but among a nation of soldiers. There is no art among an agricultural people if it remains at peace. Commerce is barely consistent with fine art, but cannot produce it. Manufacture not only is unable to produce it, but invariably destroys what seeds of it exist. There is no great art possible to a nation but that which is based on battle.

"The first dawn of it is in Egypt, and the power of it is founded on the perpetual contemplation of death by the mind of a nation of which the ruling caste were priests and the second soldiers. The greatest works produced by them are sculptures of their troops going out to battle or receiving the homage of conquered armies.

"From Egypt art passes directly into Greece, where all poetry and all painting are nothing else than the descriptive praise or dramatic representation of war.

"Thus," he proceeds, "the arts are extinguished in the hands of the Romans and do not rise again until with Gothic chivalry there came back into the mind of Europe a passionate delight in war itself for the sake of war, and under the fighting kings of France, England, and Spain and under the fighting dukeships and citizenships of Italy art is born again and rises to her height in the great valleys of Lombardy and Tuscany, through which there flows not a single stream from all the Alps and Apennines that did not once run dark red from battle.

"And from this time forward as peace is established or extended in Europe the arts decline. They reach an unparalleled pitch of costliness but lose their life, enlist themselves at last on the side of luxury and various corruption, and among wholly tranquil nations wither utterly away, remaining only in partial practice among races who, like the French and us, have still the minds though we cannot all live the lives of soldiers."

Ruskin, it seems to me, for the sake of fine language and complete ideas, was at times prone to overstate his

* From a Lecture delivered at Carpenters' Hall, London Wall.

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case. Perhaps he underestimates the influence of religion on art—perhaps we shall see as we progress that his individual estimate of the art of countries and periods is somewhat prejudiced for the sake maybe of complete principles and rounded periods, and in his generalities he over-emphasises in some cases and does injustice in others To my mind he despises unnecessarily the Roman nation, particularly in matters of art. I cannot but think in architecture, in their arches of triumph, the effect of war in the causation of fine art is most completely manifest. But with these reservations and in the larger view that Ruskin takes I agree with him, and I take his words, as I have said, in some ways as my text.

Of the horrors and terrors of war we all of us gathered here know enough, but we are inclined to forget that usually its effect is that of a violent tonic on the nation afflicted. Its influence is welding us once more into a social unit. It teaches us self-sacrifice for the good of an idea and of the community. It shows us clearly that selfish luxury and the accumulation of wealth are not the most important things in life or in the history of a nation. It stamps with a hall-mark what is the true gold and despises what we had begun to think real from its mere glitter. As far as Art is concerned, it was high time that war should come with its purifying fire. In some fifty years so-called Art had grown in Europe like unto a puffed-out and unhealthy fungus of enormous size, without beauty, without delicacy, and without health. A wave of diseased degeneracy had submerged Philosophy, Music, Literature, and Art to such a depth that, looking forward, I venture to prophesy that future centuries will gaze back with pity upon this period of mistaken morbidness.

We find, perhaps, in the German philosophers and musicians the first crystallised expression of this viciousness, but unfortunately we, with all other nations of Europe, cannot pretend that we are exempt. The morbid invention of the artistic mind is seen everywhere. We have Oscar Wilde, Aubrey Beardsley, and others. The futurists, the cubists, the whole schools of decadent novelists. We have had it also in the art of medicine, in the surgical rage for removing sundry portions of the internal organs, not when hopelessly diseased, but in a mad attempt to improve upon Nature itself and in the taking of drugs for a special excitation of the human mind. In Art, unfortunately, we cannot deny the technical skill of many of these unworthy craftsmen, and by the extent of that skill is increased the danger of the disease that has affected Art.

Recently, at a so-called important exhibition of sculpture, a man of the world well known for his logical outlook on life, in reply to my demand gave as his opinion that such an exhibition was to him "the direct road to Hell." I am telling you this to show that the disease is fairly well recognised by others than myself, and that those who know well the modern schools of thought and Art cannot very well fail to agree with his verdict.

Of course, you will find bordering upon these schools much Art which is free from viciousness and merely foolish. An attempt to do without form in Sculpture and Poetry and the Drama and without drawing and form in Painting. A portrait may be painted with some straight lines of colour and a name and nothing else. Meaningless daubs and dashes of paint represent some profound philosophic thought which the innocent critic will discuss through columns of the credulous press, and a foolish public thinks must be profound because it cannot understand them.

In architecture we have perhaps kept saner than our neighbours, and have not fallen to the new art eccentricities, which are bad enough in any form of art, but in architecture meaningless desecration—doors and windows shaped like kidneys and other entrails of the human body are really anathema, but, alas! have not been unknown in Austria and Germany. In England we have run a little off the rails in producing architecture without much intention. We have elaborated the keystone to an awful extent. We use it without meaning and quite usually cut through lintels with it. We use arches without meaning simply as a decoration, and we use pillars where there is nothing to support. We riot in niches containing nothing and plinths and bases with nothing upon them. The pediment has long ceased to be the end of a gable, and is more or less used at the fancy of the architect. Nevertheless, I think perhaps our architecture has kept itself healthier than most of the arts, and I certainly do not agree with the discovery of a well-known statesman that at last he understood why the blind walked the streets of London always looking happy, as they were unable to see its architecture.

In sculpture among other crazes we have been badly bitten by that of mutilation. We have almost decided that the complete work is not artistic, and that mutilations of a figure are. Sane England has been so far influenced that at an ordinary exhibition I have noticed that the great proportion of works were mutilated, of course counting an ordinary bust or head as a complete work. Not content with a beautiful figure conveying some idea, it has been discovered by a certain school that to lop off a leg or two legs, perhaps an arm or two arms and a head, greatly enhances the value of an artistic production. At any rate, it leaves more to the imagination. Some bolder genius of this type has gone a step further and split off a fragment of a face for exhibition; another has a head without a crown. Another unfortunate female figure had the appearance of having been caught sitting on the railway line—she had suffered amputation of both legs at the most unfortunate section, so that two full moons or discs were presented to our gaze as supporting her in hardly an artistic or poetic fashion. Then we have had marble with black veins, fissures and even pieces let in used from choice. Point holes left showing, and so much marble rough and unfinished that an ordinary reasonable being can see no reason for commencing.

I do plead for a sane future when peace comes in Art, including Architecture. Let us make things as beautiful as we can, let us make things as healthy as we can. I do not plead for an innocence that is childish and hypocritical, but for a delight in the sane and that reticence that has always marked the supreme endeavour of mankind in the masterpieces of the mind. The actor to be great may not rant and rave from the beginning to the end of his act; his power must be used with discretion to be great; it must be well considered to be effective and to appear spontaneous.

All good design has always been and always will be founded upon the centuries of good design that have gone before us. Original work must come as a natural growth in continuation of what has gone before, never by way of antithesis. To teach our Art worker originality of design it is necessary that he should be acquainted with the finest designs bearing upon his work for generations past, otherwise we shall be trying to grow a flower without a stem, without leaves or a root, which is manifestly impossible.

Now, if we rapidly consider the influence of sacred and secular war upon the art of the nations, we shall find that from time immemorial it has been the custom to incise or to cut in relief pictorial representations or inscriptions commemorating victories, campaigns, or incidents in those campaigns, such as kings returning from war, the siege and assault of cities, &c. In the British Museum you will find several sculptured panels from the palaces of the kings of Assyria, dated some 700 years before Christ.

In Assyrian and Babylonian sculpture is obtained almost a complete record of the building of palaces, court life, religion, hunting expeditions, military operations, and receiving of tribute. These go back to 2,000 years before Christ, in some cases to 4,500 years before Christ.

In Egypt the architectural and sculptured records were mainly religious, though there are also many records

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of agriculture and domesticity. The pyramids are not in any sense war memorials, being distinctly tombs.

Rameses the Great is said to have put up armoured figures holding spears at Ephesus and Smyrna with inscriptions across the breast: "I conquered this country by the strength of my arms."

War, however, produced little art in Egypt.

Our records of the effect of war upon Greek Art is very incomplete.

The Olympian Games and strenuous exercises of the body were, so to speak, a continuous preparation for war.

The Parthenon itself is a memorial of victory 438 B.C.

On the outside were carvings depicting victory of Greeks over Eastern Amazons, victory of gods over earth-born giants, centaurs, and lapithæ.

Within the colonnade the great relief of the Panathenaic procession, representing the sacrifices to the protectress of the city. This perhaps the highest effort of art, the outcome of the fighting instinct.

Nereid monument at Xanthus is perhaps more directly a war memorial.

Many temples were decorated with war-like reliefs. A combat of Greeks and Amazons was represented on the Temple of Apollo Epicurios in Arcadia, built by architect of Parthenon.

The "Victory of Samothrace" was set up to celebrate a naval victory 306 B.C., and is perhaps the most sublime war memorial ever erected.

Ruskin is wrong in saying the Arts were extinguished in the hands of the Romans.

The triumphal arches erected by the Roman Emperors to commemorate victory in Rome and in the conquered provinces are perhaps the finest architectural war memorials ever erected. There were no fewer than forty in Rome.

In the midst of wars, with the thunder of artillery round the walls of Florence, Michael Angelo was carving in secret the great memorial to the enemy, the Medici Tombs.

It is said that in the midst of wars the art of a country grows lighter and more joyous. That the human mind cannot sustain an immeasurable load of tragic sorrow, and that it searches for solace in lighter themes. Be this as it may, these tombs are grand and solemn enough in all conscience.

Now I do not know whether it has occurred to you that the final record of a race is its art. When all else has perished, its science gone, its philosophy gone, we see a ghost of what was by the remains of its architecture, of its memorials, and of its relieved and incised panels. Its woven pictures, such as tapestries, too, will sometimes survive.

This present period will probably be one of the least known to future historians. It may well be that it may be almost wiped out of the history of the centuries. Our architecture is hardly of a lasting order. It is undermined and constructed of such material that its resisting qualities can hardly be estimated. Our stone and bronze memorials are few, and it is not the custom to describe the events of our time in stone and bronze. Practically the whole of our printed records will perish with the ephemeral paper it is printed on. Our customs and our habits apparently will pass into oblivion. We shall have no Anglo-Saxon Chronicle and Doomsday Book on vellum. We shall have no Bayeaux tapestries from which we glean almost the whole of our history of the Norman Conquest.

The Bayeaux tapestry of the Conqueror's consort may be placed at the head of the early existing illustrations of the heraldry of Great Britain. In the seventy panels is exhibited a complete display of the military ensigns, both Norman and Saxon, in use at the period of the Norman Conquest. Seals, carvings in ivory, monumental memorials, stained glass complete the record.

Heraldry an art springing from the desire to distinguish individuals in war against other human beings and against animals.

In all ancient Oriental races distinguishing symbolism has existed from the earliest times. Witness the caste mark. It is found amongst the ancient Egyptians, the Assyrians, and the Jews. Æschylus, 600 years B.C., describes the heraldic blazonry of the chieftains who united their forces for the siege of Thebes. The eagle of the Romans and the dragon of the Chinese are examples of the heraldic art that carried the nations to victory or defeat.

The Crusade alliance caused a great advance in this heraldry art. The improved defensive armour and discipline and organisation demand more definite insignia. Crests were introduced and placed on helmets, and more elaborate devices on banners and on coats and shields. Thus we have a great Art distinctly growing out of war.

The Crusades gave us many memorials in the way of tombs to single leaders, but was singularly sterile in more comprehensive war memorial art.

Gradually approaching more modern times, we come to the great school of French War Art in Architecture and Sculpture. Napoleon's victories gave rise to a great outburst of Art in Paris and in France generally.

And now I will close my very sketchy survey of the influence of war upon Art by a word upon what is likely to happen in the future. If this century is to have a real record of the war through its memorials that shall be worthy of the nation, I imagine there is but one way. Never before, I am bold enough to say, has there existed such a mass of craftsmen anxiously waiting to give expression to those feelings of patriotism, sorrow, and hero-worship, that when crystallised will produce its record in stone, marble, and bronze.

The one thing needful to success is trust in the artist, whether he be sculptor, architect, or decorative painter. Those who have given their lives to the consideration of the subject are the only guides worth considering, and if you attempt to fetter them through timidity or by that so-called expert guidance that is without real knowledge and is founded on empty words then we shall fail.

A memorial must be a love gift spiritually ungrudged both by its promoters and by its artist if it is to be valued by succeeding generations. A utilitarian value detracts from its spiritual quality. A triumphal arch should be boldly nothing but an emblem of triumph. A war memorial should express simply the nobility of the individual or the common sacrifice in terms of Art. A thing of utility called a war memorial is but begging the question—beyond its usefulness it has no value in the history of the nation. Perhaps I have told you before that to commemorate Prince Albert a certain town in England proposed an elaborate scheme for a drainage scheme to be called the Prince Albert Memorial Sewer. I need hardly say that we shall not on these lines successfully compete with the nations of the past.

We are fighting the greatest war the world has ever seen at untold sacrifice. Let us sacrifice a little more, and in our gratitude make sure that its commemoration shall stand for evermore a worthy tribute to our heroes.

THE LONDON SOCIETY.

THE fourth annual general meeting of the above Society was held at the hall of the Royal Society of Arts on Thursday, March 9. In the absence through indisposition of Lord Plymouth, the President, the chair was taken by Sir Aston Webb, K.C.V.O., C.B., R.A.

The report of the work done during the year is necessarily somewhat briefer than usual, for the efforts of the Society have been mainly concentrated upon the work being done on the development plan of Greater London. This has proved to be a monumental piece of work, in which (when it is completed and published) the members will take a personal pride.

The ordinary activities of the Society were naturally greatly curtailed at the outbreak of war; in consequence

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a meeting was called, when it was decided to utilise the period of enforced leisure, by producing a Development Plan of Greater London, prepared with a view to the future, showing the main arterial roads proposed and now under discussion, and various other improvements which will become necessary, if the growth of Greater London is to be in any way controlled. Such a comprehensive plan has never yet been prepared, and it was felt, if this could be done, the Society would have something to show at the conclusion of the war, together with the fact that during this trying time employment would have been found for a certain number of architects who sorely needed it.

The idea was at once enthusiastically taken up. A special fund was started, which soon reached £500, and has since been raised to £900, thanks to the help of the Artists' General Benevolent Institution, the National Relief Fund, the Architects' Benevolent Society, and donations received from members of the Society, including the President, Lord Plymouth. A band of specially qualified directors was quickly formed, with Mr. A. E. Richardson as Honorary Acting Secretary. The Plan Committee has met continuously, and great progress has been made with the work.

When finished, the plan will contain imaginative proposals, founded on ascertained facts, laid down for the first time in complete form: the arterial roads recommended by the London Traffic Branch of the Board of Trade, with suggested modifications; also an endeavour to co-ordinate the numerous Town Planning schemes round London, together with an attempt, by means of a Parkway system, to link up as far as possible the 2,000 Open Spaces in Greater London.

Thus for the first time the future requirements of Greater London will have been studied as a whole and shown in a complete and comprehensive manner. The cost will be about £1,000, apart from the cost of reproduction. This large sum is being provided independent of the Society's Funds, and spent entirely in giving employment to the draughtsmen engaged on the plan, the directors and others interested giving their time and services without charge, and the Society lending their premises free of all expense.

To give some idea of the extent of the work which is being attempted it may be stated that when completed the plan will be about 20 feet square, the ground treated covering an area of approximately 700 square miles. The plan can be seen in course of preparation by members and friends at any time at the Society's offices (27 Abingdon Street, Westminster, S.W.), and at the conclusion of the war it will be publicly exhibited as the Society's contribution to the Development of London.

There are now seven architects steadily at work under the direction of gentlemen who have given up much of their time for this purpose. The Committee in charge is now constituted as follows: Sir Aston Webb, K.C.V.O., C.B., R.A., Chairman; Mr. Carmichael Thomas; Mr. Raymond Unwin; Professor Adshead, N.W. Section; Mr. Arthur Crow, N.E. Section; Mr. W. R. Davidge and Mr. Herbert Shepherd, S.E. Section; Mr. H. V. Lanchester, S.W. Section; Mr. H. J. Leaning and Mr. W. E. Vernon Crompton, N. Section; Mr. David Barclay Niven, S. Section (Mr. Niven is also superintending the S.W. Section while Mr. Lanchester is in India); Mr. Lawrence Chubb and Mr. Basil Holmes, Open Spaces; Mr. Robert Atkinson; Mr. Guy Dawber.

When Mr. Lovell (now Captain Lovell) temporarily resigned from the Secretaryship, Mr. George Drysdale became Honorary Acting Secretary for the work on the plan, but, owing to continued ill-health, he was obliged to leave London in the early summer. Since then, Mr. A. E. Richardson has had entire control, and the Society is much indebted to him for the energy and skill he is expending in co-ordinating the immense amount of valuable information to be shown on the plan.

The Society are working in cordial co-operation with the Royal Institute of British Architects. They have also been accorded the full sympathy and assistance of the Borough Councils, and particularly the co-operation of Colonel R. C. Hellard, C.B., of the London Traffic Branch of the Board of Trade.

A Bill brought before Parliament in February 1916, is seeking powers to strengthen Charing Cross Bridge, as it is not considered safe in its present condition to carry more than two trains at a time. The artistic result, so far as can be gathered from the published particulars, would be nothing less than deplorable; and, as the scheme provides for no road bridge, and there seems no possibility of completing the work for the duration of the war, the Society intends to use every means within their power to oppose it. The cost of the scheme is estimated at £150,000. A special sub-committee of the London Society has been appointed to deal with this matter.

After thoroughly investigating their subject and getting into touch with one or two leading publishers, the Borough Books Committee recommended that the scheme be suspended for the duration of the war. In their report to the Executive, dated May 26, 1915, they stated: "It has not been found possible to arrange for the preparation of the literary matter during the war, as was proposed, without first coming to terms with the publishers, and this we must hope to do in happier times, as our discussions and inquiries have confirmed the opinion that an authoritative work on the London Boroughs, conceived and carried out in a manner worthy of the London Society, should be of real value and should find a good market when peace returns."

It is hoped, now that the days are lengthening, to arrange for the reading of some papers connected with the objects of the London Society. Sir Laurence Gomme had agreed to read a paper on "Open Spaces in London," and he was engaged on this until very shortly before his death. Further negotiations are in progress, and it is hoped that papers will be read during the spring and summer by Mr. Arthur Crow, Mr. W. R. Davidge, and Mr. Lawrence Chubb.

Three issues of the Journal have been published during the past year, in which further details of the work of the Society can be noted. On the departure of Mr. Lovell (who was joint editor with Mr. H. J. Leaning) to join the Army, the editorship of the Journal has now fallen entirely upon the shoulders of Mr. Leaning.

Members have been faithful to the Society during a time when pressing appeals have been made from all quarters. That new members could be obtained during the war was hardly likely. The Council will greatly appreciate any efforts to obtain more new members and more financial assistance to carry out the objects and aims of the London Society.

Sir Aston Webb, the chairman, in proposing the adoption of the report, congratulated the members on the fact that there was a small balance of £30 on the right side. The Society was just managing to pay its way; they hoped to continue so to do. They had lost their secretary, Captain Lovell, who is now serving his country in the North of England; they did not wish to lose him, but they agreed with him that he ought to go. The Society had lost during the year such members as Sir Laurence Gomme, Lord Alverstone, Mr. H. L. Florence, Mr. C. E. Mallows, and Mr. Van Straaten. There were a certain number of new members, amongst whom was Sir G. E. Welby, the Mayor of Westminster—the more mayors there were on the Society's membership the better they were pleased. It was proposed to hold a few meetings this year, whereas last year there were practically none. The principal work of the Society had been in connection with the development plan of London; it was progressing nicely and they had received £900 out of the £1,000 asked for. Not only would the Society have a very fine plan when it was finished, but they had the satisfaction of employing a certain number of professional men during these hard times. It would be probably necessary to issue a handbook with the plan. Charing Cross Bridge was a subject which cropped up

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pretty often. At the moment it was entering on an acute stage. Some two weeks ago Mr. Ernest Newton (the President of the Royal Institute of British Architects) and himself had written a letter to the "Times" pointing out that the South-Eastern Railway Company had presented a Bill empowering the company to spend a large sum of money on strengthening one half of the present bridge, and that "this work, when completed, will add nothing to the much-needed accommodation for road traffic over the river at this point, but would prolong indefinitely the existence of the present unsightly bridge which the chairman of the company admits 'is not an ornament to the river.'" Charing Cross Bridge, which ought rather to be removed, was evidently constructed at two different times: the first half was built somewhat lightly, the second more strongly. The weight of trains had increased so much that the half of the bridge on the Waterloo side needed strengthening. At present only two trains at a time could run over the bridge, and these must not be on adjoining lines. The company wanted four at a time and had hit on the ingenious expedient of strengthening that part of the bridge with iron arches. If this plan were adopted the bridge on the Waterloo side would be supported by arches and on the Westminster side by girders. He could hardly think that such a proposal could be seriously meant. Fortunately, the Bill had to go before the House of Lords, where Lord Plymouth had put down for consideration an instruction to the Select Committee. In the absence of Lord Plymouth through indisposition, Earl Beauchamp in the House of Lords moved an instruction to the Select Committee considering the Bill to take into consideration the traffic requirements at this point and to hear evidence from that Society, the R.I.B.A., and other bodies. The representative of the railway company expressed himself as willing to receive suggestions. If the instruction is passed the Society ought to feel satisfied with what they had done up to the moment. The Society had carried on its general work quietly and unobtrusively, believing that very often a suggestion was a seed which grew into an important result. There was only one London, and it was the duty of the Society and of all to make it as beautiful and as wholesome as possible.

Sir John Young seconded the adoption of the report, which was agreed to unanimously.

The vacancies on the Committee caused by the death of Sir Laurence Gomme and the resignation of Mr. J. Boyton, M.P., were filled by the election of Mr. W. E. V. Vernon Crompton and Mr. P. E. Pilditch.

Mr. Carmichael Thomas proposed a vote of thanks to the chairman. Sir Aston Webb, in replying, paid a warm tribute to the energy of the directors and of the draughtsmen engaged on the development of London plan.

ART IN LONDON.

AT THE DOWDESWELL GALLERIES.

SIR RICHARD STEELE, in "The Tatler," wrote concerning Lady Elizabeth Hastings: "Though her mien carries much more invitation than command, to behold her is an immediate check to loose behaviour; to love her is a liberal education." How applicable are these sentiments to Art! She invites us to worship at her shrine, she desires to obtain no unwilling slaves to bow at command. And when we bend our gaze upon her gracious form, gross materialism shrinks away and only purified passion remains in her presence. Truly "to love her is a liberal education."

But it is Art who is our mistress; not those who wear a mask and (semi-disguised) assert boldly, "Behold the New Art!" "We are some recent developments of Modern Art!" (Why, the very terms "New Art," "Modern Art," are a reproach and are self-condemnatory.) Art is not new, and is as far from being modern as Nature itself. Can we picture to ourselves a new or modern Nature? A travesty of such—yes! And similarly there may be a travesty of Art.

We prefer not to dwell at length upon the works of the disciples (call them apostles, and it please you) of developed Art. Truth to tell, our mistress, old as she is, is ever young in the sense that we may discover fresh beauties, whilst the older-known ones never pall, never lose their freshness.

Messrs. Dowdeswell & Dowdeswells know how to gauge the public, both those who spell Art with a big "A" and those to whom it never occurs to spell the word at all. At the recent private view we heard some—young enough to enjoy the sound of their own voices, old enough to know better—who, by their inept criticisms, raised in us a desire (carefully suppressed) to mount the rostrum then and there and to discourse to them upon the elementary principles of Art.

But let it pass! The idiosyncrasies of some may be condoned in view of the sanity of others. Let us be reasonably thankful to find in the exhibition good work by Burne-Jones, Turner, Albert Moore, Alfred Stevens, Sargent, G. L. Brockhurst, and some few besides; their work is the ointment, whosesoever may be the fly. Mr. Sargent's "The Moraine" is a truly remarkable production, demanding and receiving the boldness of execution characteristic of this artist. Lucien Pissarro, too, has some passably good work amidst some that displeases. Miss Clare Attwood's dessert piece (No. 10) merits very high praise for its good feeling and realistic texture. Mr. Henry Tonks' studies are noteworthy. Mr. Sickert's sketches are effectively produced and exhibit the quality of simpatica. We are particularly pleased to draw attention to Mr. Augustus John's study of "A Peasant Woman." Mr. Wilenski shows good technique. But we purpose closing with a notice of the works by Henri Gaudier-Brzeska, who a short while since made the last great sacrifice in France. His animal-life sketches show more than promise—they show performance.

THE L.C.C. SCHOOL OF BUILDING.

WE have frequently urged that, even in war time, education should go on, and not even technical schools should be discontinued while there are students to be found who for various good reasons are unable to help actively in the war. Therefore we recently paid a visit to the L.C.C. School of Building in Ferndale Road, Brixton, and there we were shown what is being done to train youth in the way it should go, technically and decoratively.

Of course, for the old system of apprenticeship any rational being has affectionate regard; the intimate association between master and acolyte, between theory and practice, which held good in bygone days we regard as invaluable. But from reasons which need not now be discussed the days of the old-time apprenticeship are gone, and indisputably the system in vogue at the Brixton School cannot fail to produce good work and good workmen. Initiative on the part of the students is encouraged, not suppressed, and, after a two years' course of study of historical example, the third-year lad devotes his energies to building up new combinations of old ideas.

Though we were courteously conducted by Mr. Richards (the principal) over the whole extent of the building, yet the intention of our visit was particularly to view the painting and decorating section of the school, an invitation to inspect this having been sent to the London Association of Master Decorators. Here we saw the practical method of instructing students in weakening down pigments with white, in order to work up co-ordinated tints from the mixture. Here, too, we saw the study in plain tinting, in graining and in stencilling; and here also we saw the pencil and crayon designs prepared by students, with a view to subsequent pigmental treatment.

In the course of our inspection we listened to some brief remarks upon the co-partnership of Art and Science; we were prepared to say—aloud, if necessary—that

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Science can never take the place of artistic taste; but our intervention was unnecessary, as Mr. Shepherd (who collaborates with the Art instructor, Mr. Jackson) anticipated such criticism by his own assent to its verity. Again, Mr. Jackson showed us a scale of colour discs, which he had arranged in such fashion that any two diametrically opposed tints would in intimate "light" combination produce the same tone and tint of neutral grey. Prepared as we were to demur at this, criticism was disarmed when theory was triumphantly vindicated by means of a practical little machine, which demonstrated the correctness of Mr. Jackson's views. This is true only of "light," not of pigmental colour. Other interesting instructional tit-bits were laid before us by Messrs. Jackson and Shepherd, to whom a hearty vote of thanks was accorded for the demonstration.

Much else that was attractive was shown to the party and the cordial expression of thanks voted to Mr. Richards and his assistant, Mr. Sage, was as spontaneous as it was well merited.

ARCHITECT'S RESPONSIBILITY IN RESPECT OF ANCIENT LIGHTS.

IN the King's Bench Division on Monday, March 6, before Mr. Justice Rowlatt, sitting without a jury, an action was brought by Mr. Arthur Edward Northcote, an architect, against Minister & Co., Ltd., fashion-plate printers, 46 Great Marlborough Street, Westminster, to recover £347 11s., balance of account for fees for professional work done for the defendants.

The defendants set up a variety of defences to the claim, but the chief points raised were that the plaintiff warranted by his plans that the building that was to be erected at 55 and 56 Poland Street, Westminster, would not infringe rights of light and air vested in neighbouring owners, and that this warranty was not carried out, and the defendants put forward a counterclaim against Mr. Northcote and against Mr. Samuel Nixon, of Cavendish Square, who had acted as surveyor for them, for damages, one of the items of damage claimed being £225, that it was said had been paid in settlement of certain claims.

Mr. Gibbons, K.C., Mr. Brandon, and Mr. Head were counsel for the plaintiff, Mr. Holman Gregory, K.C., and Mr. A. Neilson were for the defendants (Minister & Co.), and Mr. Hollis Walker, K.C., and Mr. Woodgate represented Mr. Nixon.

Mr. Gibbons, K.C., said that the plaintiff brought his action to recover remuneration due to him for work as an architect for the defendants, who were erecting buildings at Poland Street. The architect had the assistance of Mr. Nixon, who had been made a defendant to the counterclaim of Minister & Co. The plaintiff sued for £347 11s. for work done between March 1913 and December 1914, this being a balance of account. The defendants said they employed the plaintiff to prepare plans for the erection of premises at 55 and 56 Poland Street (for the acquisition of which they were negotiating) at the request of Mr. Nixon, the surveyor who was acting for them, and it was warranted that the buildings to be erected should contain the floor-space shown in the plans, and should not infringe rights of air and light possessed by neighbouring owners, and the questions that arose in the case were questions of light and air. The defendants said that on the faith of the plans and the warranty pleaded they entered into certain indentures of lease dated July 1913 and July 1914, and placed a contract for the erection of the buildings.

Mr. Holman Gregory at this stage interposed to say that his clients' counterclaim included £225 that they had had to pay to builders in consequence of certain arrangements having been made with adjoining owners.

Continuing, Mr. Gibbons, K.C., said that the substance of the defendants' complaint was that Nos. 55 and 56 interfered with the air and light rights of the Roman Catholic school in the rear, and that No. 55, with which they had nothing to do, interfered in some way with the rights of owners of No. 54. Mr. Gibbons proceeded to call his Lordship's attention to certain of the letters in the case, and it was mentioned that the building of No. 56 was delayed because of a difficulty about a party-wall between 55 and 56. When the erection of No. 56 was begun, Mr. Curtis, the surveyor to the Roman Catholic schools, wrote to suggest that the proposed building of No. 56 equally affected the ancient windows of the school as did the rebuilding of No. 55. The plaintiff replied that he did not consider that the rebuilding of No. 56 would affect the windows, and that the surveyor of the Sutton Estate agreed with this view. Eventually the position was taken up that the new building of No. 56 would not more affect the school windows than did the old building, and it was intimated that the project as to No. 55, in consequence of the War, was not being then proceeded with. Then a writ was issued on behalf of Archbishop Bourne as a Trustee of the school property against the defendants, Minister & Co., claiming an injunction to restrain the erection of any building on the site of No. 56. The matter was taken up by Mr. Guilford Lewis on behalf of the defendants, and (Mr. Gibbons asserted) another architect, a Mr. Hubbard, was called in, and he expressed the view that the proposed building would involve certain interferences with the rights of neighbouring owners. There was no suggestion at this stage that there was anything in the nature of a guarantee or warranty by the plaintiff such as was now apparently relied upon by the defendants.

Mr. Gibbons incidentally observed that the legal authorities had laid it down that an infringement of light was not actionable unless it amounted to a nuisance.

Counsel added that in a letter to Mr. Lewis dated October 10, Mr. Northcote pointed out that in regard to No. 56 it was felt that what had been done at No. 57 could be repeated at No. 56, and that no damage could accrue to the schools in the rear of No. 55. With regard to the rebuilding of No. 55 (the letter added) the case was different. "I was all along prepared for opposition from the schools and the owner of No. 54. A stipulation that the plans might have to be modified on account of the adjoining owners was inserted in the contract with the lessors."

Counsel said it was fully understood as to No. 55 that there would be claims for rights of lights, and the claims that were put in for the schools were, in fact, fully anticipated, and he could not understand how any alleged liability could attach to the plaintiff.

Dealing with the further correspondence between Mr. Lewis and Mr. Northcote, Mr. Gibbons said that Mr. Lewis took up the attitude that Mr. Northcote and Mr. Nixon "were responsible for the plans and any consequences that might arise from the building operations."

Mr. Samuel Nixon deposed that he was a surveyor of over twenty-six years' practice, and he had been previously employed by the defendants before this work. He was asked by a Mr. Kann to see him, and eventually he got into communication with Finbers, the agents of the site, and viewed the site on several occasions. Mr. Kann told witness he wanted built on No. 56 a house similar to No. 57; he wanted open floors throughout, and as much daylight as possible. Various particulars were discussed, and witness pointed out that he could not undertake that what was done without objection at No. 57 could be similarly done at No. 56. The building was eventually finished off at the same height as No. 57. Witness later made various inspections and inquiries, and pointed out that it was impossible to say that there would be no claims in respect of lights, and it was probable that these matters could be settled. Mr. Kann made the remark, "I suppose we must chance it." The defendants consented to Mr. Northcote becoming the architect. At an interview at which witness, Mr. Kann, and Mr. Northcote were present, Mr. Kann said that questions of lights might arise, but it would be time to deal with them when they did arise. The plaintiff re-

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ferred to property in front and the back and pointed to the probability of these matters arising, and Mr. Kann said. "Yes, Mr. Nixon has told me that." Mr. Northcote was instructed to prepare plans for No. 56 similar to No. 57, but questions arose about a party-wall between 56 and 57, and delay resulted.

Mr. Justice Rowlatt: What with lights and party-walls I wonder they ever got it built.

Mr. Gregory: Well, it took two-and-a-half years.

Mr. Nixon went on to say that as to No. 55 he had no doubts that the building could not be carried out without interfering with the lights of the Catholic schools and of No. 54, and Mr. Kann was fully aware of this. The difficulties were continually discussed.

Mr. Northcote, the plaintiff, said that he was an architect and surveyor and had been in practice for twenty years. He saw Mr. Kann first on March 20, 1913, and on that day visited the site and was able to see certain of the surrounding buildings only. Mr. Kann told witness that the question of putting up new premises on the site of No. 56 had been discussed, and he gave a description of the sort of building that he required. No. 57 was to be taken generally as the model. Nothing was specifically said about the Roman Catholic schools.

He never guaranteed there would be no question of rights of light or anything of that sort.

Continuing his evidence on Tuesday, March 7, Mr. Northcote said that he was assured that his plans as to No. 55 would be approved subject to questions of light and air, and his letter of October 10 to Mr. Lewis pointed this out. He told the defendants that the plans were subject to the rights of adjoining owners, and he never said anything about slight modifications being necessary.

In cross-examination Mr. Gregory suggested to the witness that as to No. 55 and the Roman Catholic schools the building was erected at a 65-angle, and he wished to know if Mr. Northcote regarded this as a slight interference with the light.

Witness replied in the affirmative, and said he thought the angle generally in both cases was 63½.

Models of the buildings were produced in court and discussed in detail during the cross-examination.

Mr. Banister F. Fletcher, F.R.I.B.A., gave evidence in support of the plaintiff's claim. He said No. 56 would affect the light of the schools, but not materially.

On Wednesday, March 8, the case was further continued.

Mr. Holman Gregory, K.C., briefly opened the case for Minister & Co., and suggested that Mr. Nixon and Mr. Northcote were virtually partners employed by Minister & Co. If either did that which was wrong both were responsible. As to alleged negligence his case was that Minister & Co. were justified in the steps they took because Mr. Northcote was negligent with regard to plans, both as to No. 55 and 56. Mr. L. Kann, on behalf of Minister & Co., told Mr. Northcote distinctly that whatever happened litigation and trouble about the lights must be avoided, and not a stone must be put on the buildings that would in the least interfere with the neighbours' rights of light. It was on that undertaking that Mr. Northcote went on with his work.

Mr. Kann, of Minister & Co., gave evidence to the effect that he relied on Mr. Northcote and Mr. Nixon that there would be no claims that could not be settled. The instructions were for all possibility of questions of light arising to be excluded. Mr. Guilford Lewis, solicitor to the defendants, also gave evidence on similar lines, and other witnesses called included Mr. T. B. H. Scott, chief assistant to the architect of the Roman Catholic schools, and Mr. Stone, the surveyor for No. 54.

On Thursday, the 9th, further evidence was called for the case for Minister & Co. Mr. Neilson read the affidavit of Mr. George Hubbard, who said he was a Fellow of the Institute of British Architects, and lately Vice-President of the Institute. He had had considerable experience as to light and air, and he was called in for consultation over these matters by Mr. Lewis. He was consulted about No. 56 Poland Street, then in course of erection, and he formed the opinion that if erected according to the plans there would be interference with the rights of light of the Roman Catholic schools, and Minister & Co. would not be able to successfully defend an action against them for such an interference. Unless modified, he thought the plans were such as would result in the creation of a nuisance in the legal sense of the term.

Mr. William Charles Symes, Licentiate of the Institute of British Architects, gave similar evidence as to the alleged interference with light that was involved by these plans.

Mr. D. Watney, F.R.I.B.A., deposed that the alterations made by Mr. Hubbard in the plans were necessary.

Mr. Alfred W. S. Cross, F.R.I.B.A., was also called, and he gave similar evidence. In reply to Mr. Gregory, witness said he had never heard of any practice among architects to claim some extravagant right to build with the intention of settling with the persons who claimed.

This closed the case for Minister & Co.

Mr. Justice Rowlatt said he felt a difficulty about the case as against Mr. Nixon and the evidence of his employment.

Mr. Gregory on this point addressed his Lordship, and said he submitted that both Mr. Northcote and Mr. Nixon were jointly responsible for a broad mistake by not taking proper observations and not properly working out the angles.

Mr. Hollis Walker, K.C., submitted there was no case against Mr. Nixon to saddle him with liability.

Mr. Gregory addressed the Court in reply, and subsequently Mr. Walker, on behalf of Mr. Nixon, called Mr. Antoine W. Roques, Lic.R.I.B.A., and Mr. Frank Elgood, F.R.I.B.A., who took the view that the light of the schools would not have been materially affected by No. 56.

Mr. H. D. Searles Wood, F.R.I.B.A., said he had had forty-two years' experience in London, and he had inspected these buildings. He thought Mr. Northcote's plans for No. 56 would not interfere with the schools.

This completed the evidence in the case.

Mr. Justice Rowlatt, in delivering judgment, dealt firstly with the case of No. 56, and said that, allowing for the fact that the light was a lateral one, he thought the Roman Catholic schools would have obtained an injunction for an infringement of their light. It was said that a new window might have been put in to get over the difficulty, but it was extremely difficult when a man's light had been infringed to go to him and say, "Have a different window." Strictly speaking, one could not call on a man to alter his building to diminish the injury one had caused to him, and one could not call upon schools who had difficult people to deal with—officials whose minds could not be fathomed—to act in that sort of way.

Therefore he came to the conclusion that the school light was infringed, and it was reasonably probable that an injunction would have been granted if the matter had not been settled. He did not think a professional man was bound to be infallible, far from it, but he must be careful and diligent. The case for Mr. Northcote was, he was authorised to chance the matter of the lights, but his Lordship thought Mr. Northcote misjudged the situation and did not really apply himself to the angles of light. He said in his letter, it was felt what was done at No. 57 could be repeated at No. 56, and the fact was he "chanced" it, the matter was not really gone into, and the possible claim of the schools was not taken into consideration. This raised the point whether under the terms of his employment he was authorised to act in that way. It was not a very likely thing for a client to say to his architect "I will chance it" in the sense that plans were to be drawn regardless of other people's rights, but it was likely that a client might point out the difficulties to the architect, but tell him to go on, especially at an early stage, but without limiting the archi-

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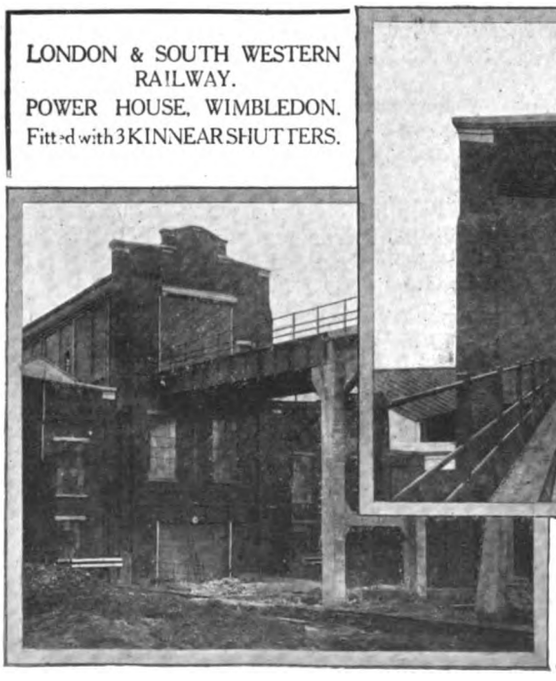
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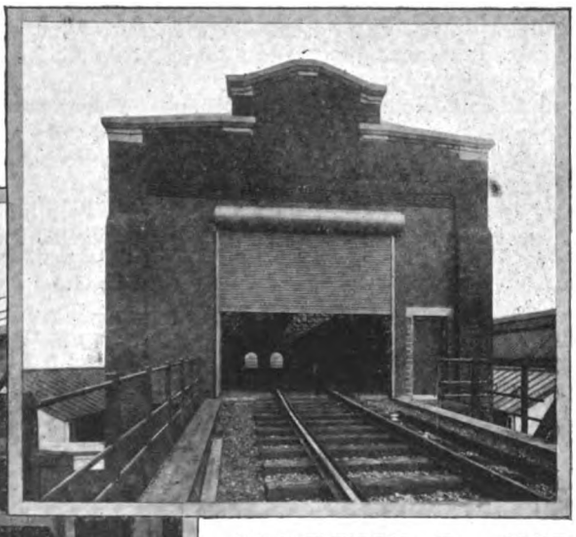
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tect's obligation to take care. He (the Judge) could not take the view here that the architect's duties were limited by any conversation in which he was told that these matters would be dealt with as they arose, and he was of opinion that the claim of Minister & Co. against Mr. Northcote in respect of No. 56 was made out. As regarded No. 55 the position was rather different, as everybody saw that there was a danger and difficulty about it, and various discussions arose from time to time, and he was satisfied when the instructions were given to Mr. Northcote it was fully understood that openings were left for modification. What was intended and what was understood was that some little changes might have to be made to meet the punctilious or small claims on the part of the schools and possibly others, but it was not intended that the plans were to be so provisional that it might be necessary to make alterations which really amounted to almost rebuilding and making the place entirely different. Now, were these plans as reasonably near the mark as that? He thought they were not, and he had come to the conclusion that Minister & Co. also made good their case with regard to No. 55, and he thought they were justified in dismissing Mr. Northcote in the way they did.

Subsequently his Lordship went on to deal with the position of Mr. Nixon, and said he was satisfied that Minister & Co. could not sustain their case against Mr. Nixon on the grounds that, as they alleged, he was a partner in fact with Mr. Northcote. Therefore so far as the case against Mr. Nixon was concerned he gave judgment for Mr. Nixon with costs.

As between Mr. Northcote and Minister & Co., the accounts would have to be gone into to see what was due to each party.

Mr. Holman Gregory, K.C., suggested that Mr. Nixon was not entitled to his costs, as but for him Minister & Co. would not have engaged Mr. Northcote, who was a stranger to them, but his Lordship would not interfere with his previous decision.

The accounts were then closely gone into, and it was announced that the sum for which Mr. Northcote was entitled to judgment for fees was £256 18*s.* 1*d.* (less £96 paid), and Minister & Co. were entitled to £375 6*s.* 2*d.* on their counterclaim. Judgment was entered for the plaintiff for the sum mentioned and costs, except with reference to the issue of negligence, as to which Minister & Co. would have the costs; and judgment was entered for Minister & Co. on the counterclaim for the sum stated, with costs, and at the request of Mr. Holman Gregory, K.C., Mr. Justice Rowlatt declared that the issue at the trial had centred upon that of negligence.

Mr. Gibbons, K.C., said that the whole question of the duties of an architect was involved here, and as in regard to No. 56 it was a very fine point, he asked for a stay, as it might be desired to take the opinion of another Court.

This application was granted on terms.

THE Royal Academy has fixed Friday, March 24, as the date for receiving architectural drawings, water-colours, &c. Oil paintings must be sent in on March 25 or 27, and sculpture on March 28.

A COURSE of three illustrated lectures on the Rude Stone Monuments of Ireland will be delivered at Alexandra College, Dublin, by Mr. R. A. Stewart Macalister, Litt.D., F.S.A., Professor of Celtic Archæology, University College, Dublin, on Friday, March 24, Wednesday, March 29, and Friday, March 31, at 8.15 o'clock. Lecture I. is entitled "The Dolmens," and will deal with the distribution, date, and purpose of these monuments, and with the ideas of the Stone Age regarding death and burial. The subject of Lecture II. is "The Standing Stones," their various purposes, their consecration, under Christianity, and their inscriptions, including Ogham writings. In Lecture III. Professor Macalister will describe "The Stone Circles," labyrinths, and rock-scribings, and will give some account of religious ideas in the Bronze Age.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BEDFORDSHIRE.

Slip End.—The "Rising Sun" p.h.: alterations.

DEVON.

Cullompton.—House, Colebrook Lane, for Mr. F. Forse.
Two houses, Higher Street, for Mr. Plumpton.

Plymouth. — Asylum: extension. Messrs. Thornely (F.R.I.B.A.) & Rooke, architects, 11 The Crescent.

DURHAM.

Stockton-on-Tees.—Six houses, Mowbray Road, Norton. Mr. J. W. Bainbridge, builder, Norton Road.

ESSEX.

Braintree.—Foundry: extension, for Messrs. Lake & Elliot.
Manor Works: addition.

HERTFORDSHIRE.

Stevenage.—The "Coach and Horses" p.h.: alterations. Messrs. W. Austin & Sons, contractors, Letchmore Green.

KENT.

Faversham.—Building, Hogg Island Wharf, for Messrs. Rigden & Co.
"The Laurels," London Road: addition. Messrs. E. Power & Son, architects, 54 and 55 Park Road.

Ramsgate.—Bungalow, Pyson's Road, for Mr. G. Griggs.
Garage, Shaftesbury Street, for Mr. Bryant.

LANCASHIRE.

Freckleton.—House and farm buildings, Higher Road, for Mr. W. Rigby.

Lancaster.—Asylum: extension. Messrs. Austin & Paley, A.R.I.B.A., architects, Castle Park.

Leyland.—Works, Leyland Lane, for Mr. J. Davies.

Liverpool.—Cinematograph Hall and Café, Clayton Square and Houghton Street, for Mr. L. Best.

Marton.—Two houses, St. Anne's Road, for Mr. Popplestone.
Stables and piggeries, Preston Old Road, for Mr. A. Jackson.

Wesham.—Boiler-house, Weeton Road, for Fylde Industrial Co-operative Society.

Wrea Green.—Stables and piggeries, Bryning Lane, for Mr. J. Kirkham.

LINCOLNSHIRE.

Lincoln.—Buildings, for Messrs. Clayton & Shuttleworth, Ltd.

NORTHAMPTONSHIRE.

Higham Ferrers.—Factory, Commercial Street, for Messrs. Sudborough.

STAFFORDSHIRE.

Alrewas.—Two houses, for Mr. Lucas.

Chasetown.—Two houses, High Street, for Mr. West.

Streetly.—"Longfield," New Lodge Wood: addition as an auxiliary hospital.

SUSSEX.

Hastings. — Flats, Caves Road. Mr. H. Ward, A.R.I.B.A., architect, 8 Bank Buildings.
Flats, Milward Road. Mr. R. Hembrow, architect, 65 Queen's Road.

Horsham.—House, Brighton Road. Messrs. H. Lindfield & Son, builders, 42 Brighton Road.

WARWICKSHIRE.

Birmingham.—Factory, Landore Street. Messrs. Buckland, Haywood & Farmer, FF.R.I.B.A., architects, Norwich Union Chambers, Congreve Street.

WESTMORLAND.

Windermere.—May Cottage: additions. Messrs. Pattinson (Windermere), Ltd., builders, Elm Grove.
Old Police Station, Lake Road: conversion into two houses, for Mr. J. Micholson.
Oldfield Cable Works: additions. Messrs. Walker, Carter & Walker, architects, Central Buildings.

WILTSHIRE.

Amesbury.—Hotel. Mr. M. Harding, architect, 58 High Street, Salisbury.

Wrington.—School. Mr. J. G. Powell, architect, County Hall, Trowbridge.

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ENGLAND—*continued.*

WORCESTERSHIRE.

Dudley.—Offices and works. Mr. A. T. Butler, F.R.I.B.A., architect, 31 Priory Street.

YORKSHIRE.

Huddersfield.—Artizans' dwellings. Mr. A. P. Horsley, borough engineer.

WALES.

Aberdare.—Shops, &c. Mr. T. Roderick, architect, Clifton Street.

Mold.—Hospital: extensions. Mr. A. Roberts, architect.

SCOTLAND.

Aberdeen.—Factory, North Esplanade West and Russell Road: alterations. Mr. G. B. Mitchell, architect, 148 Union Street.

House, Garthdee Road. Messrs. Wilsons & Walker, AA.R.I.B.A., architects, 375 Union Street; also Tow warehouse, Kingsland Place.

House, East North Street: alterations. Messrs. D. & J. R. McMillan, F.R.I.B.A., architects, 175 Crown Street.

Office and store, Commercial Road. Mr. J. Cameron, architect.

Dundee.—House, Brook Street: alterations, for Mr. R. Baxter.

Offices, Meadow Street: additions and alterations, for Messrs. Samson & Unna.

Store, South Baffin Street, for Messrs. A. G. Kidd & Son, Ltd.

Forfar.—Lilybank Farm: proposed alterations. Mr. T. R. Soutar, architect, 42 East High Street.

Paisley.—R.C. School, Stow Street: extension.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 1,220.—January 26, 1915.—Construction of Floors and the like.—F. W. Edlin, 10 Stalmine Road, Walton, Liverpool.—This invention has reference to floors, landings, and like building structures composed of beams laid side by side, which beams are formed of blocks of cement, concrete, or the like, placed end to end and tied together by longitudinal rods. The present invention consists in constructing each of the blocks with a cavity in each side face, with an overhanging flange as the upper margin to the cavity and with a lower flange of greater width than the upper flange; and in securing a plurality of such blocks together for forming beams by means of rods which are arranged in the lower flanges and have their ends secured by means of nuts screwed thereon, or by cotters, or by pins or bolts passed through loops formed in the ends of the rods. Fig. 1 is an end view, and fig. 2 a side elevation of the flooring or landing. Figs. 3 and 4 are views showing blocks of slightly modified form, and fig. 5 shows another modified construction of block and bond. The blocks of which each complete floor or like beam or member is comprised are marked 1, and the metal ties 2, 3 are the recesses in the sides of the blocks, which in the case shown in figs. 1 and 2 are formed by an upper overhanging flange 4 and a lower flange 5, the latter of which, in a flooring or landing, touch one another. The recesses 3 form the keying spaces or cavities, and when filled with grouting or the like the latter forms the key between the adjacent elements, and also makes the whole structure practically one. In figs. 3 and 4 the form of the recesses 3 is slightly different from that shown in figs. 1 and 2; the part in this case which overhangs the cavity above being the greater part of the depth of the block at the side, the cavity being formed only in the lower part. The blocks are preferably hollow, and the depth or thickness of the top portion of them, which takes the compression stresses, is made of a depth to suit the stresses, whilst the tension stresses are taken by the ties 2, which are made of sufficient strength to take them. The ties in the constructions shown are passed through the lower portions of the blocks, and on the outside of the end blocks of the beam or member a transverse bar or plate 6 is

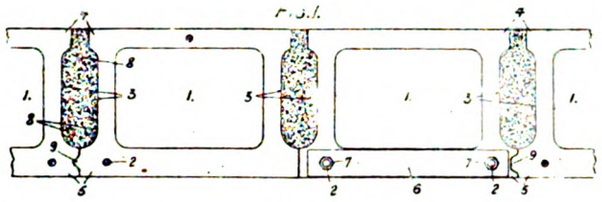


FIG. 2.

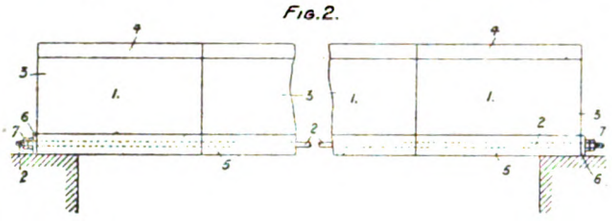


FIG. 3.

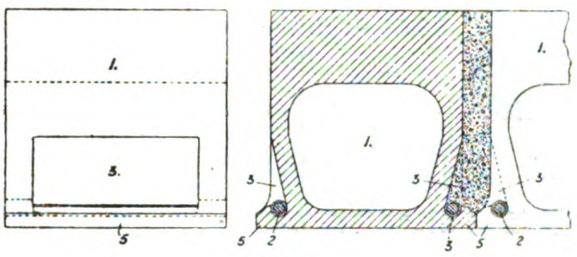
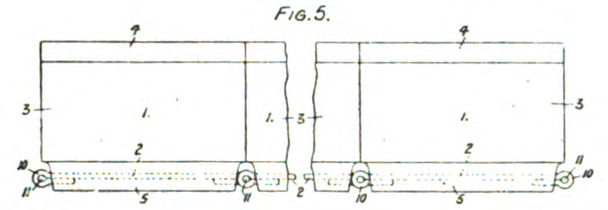


FIG. 4.

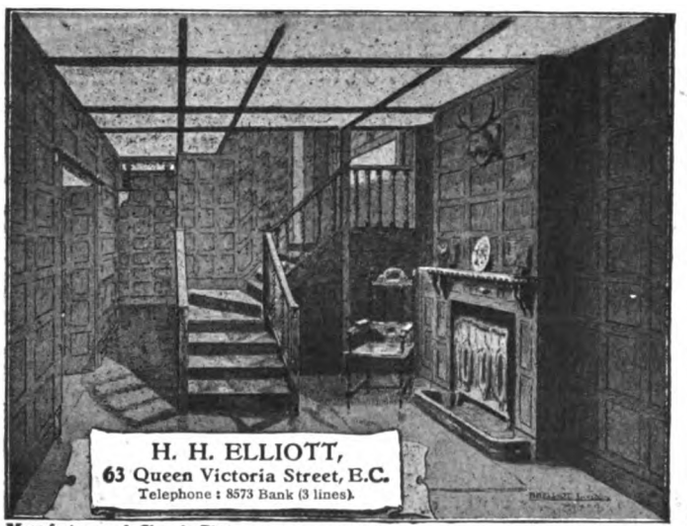
FIG. 5.



employed, through which the ends of the ties 2 are passed; and the blocks are all drawn up tight, end to end, and bound and tied together by nuts 7 screwed on to the ends of the bars, or by cotters passed through them, or equivalent fastening means. When a number of blocks are all placed and threaded together, and tied by the ties 2, the tied beam or member thus made constitutes a species of girder, and can as such be slid or otherwise moved into position in one. In making a floor, landing, or the like no temporary centering, scaffolding, or other supporting means is necessary, and hence a great saving in the cost of building construction and time is attained. The blocks are preferably made comparatively small—i.e. such that can be easily handled, say, for example, from 9 to 15 inches long by 9 to 15 inches broad, and of 3 to 18 inches deep. In the arrangement shown in figs. 1 to 2 the holes for the rods 2 are wholly within the concrete or body of the blocks; whereas in the construction shown in figs. 3 and 4 the cavities 3 extend down to the holes in the blocks through which the ties 2 are passed, except at the end of the blocks, and thus the grouting which is filled into the spaces between the blocks can pass down to the ties, and so they become properly enveloped and sealed with grouting.—January 26, 1916.

THE mosaic tympanum over the main doors of Westminster Cathedral has been exposed to view. The group consists of five figures, representing Christ seated on a throne in the centre, the Virgin Mary, St. Joseph, St. Peter, and Edward the Confessor. Mr. R. Anning Bell, A.R.A., is responsible for the design, and Messrs. Powell, of Whitefriars, carried out the work. The tympanum measuring no less than 27 feet across, it will be noticed that the figures are by no means overcrowded, nor can the artist be accused of introducing overmuch movement into the space.

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FORTHCOMING EVENTS.

Friday, March 24.

Glasgow Architectural Craftsmen's Society: Annual General Meeting and Sketching Club Exhibition, at 7.45 P.M.

Monday, March 27.

Royal Institute of British Architects: Special General Meeting to confirm the resolution as to suspension of By-laws governing the Annual Election, at 4.30 P.M.

Victoria and Albert Museum: University Extension Lecture XXIII. on "English Renaissance Architecture (1500-1900)—Georgian Public Buildings," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Tuesday, March 28

Royal Sanitary Institute: Discussion on "Made-Down and Tenemented Houses," to be opened by Mr. G. M. Pettit, at 4.15 P.M.

Wednesday, March 29.

Northern Architectural Association: Annual General Meeting at 6 Higham Place, Newcastle-upon-Tyne, at 4.30 P.M.

Carpenters' Hall: Lecture entitled "Indian Building, Ancient and Modern," by Sir Krishna G. Gupta, K.C.S.I., at 7.45 P.M.

Thursday, March 30.

British Museum: University Extension Lecture XXIV. on "Byzantine Architecture (A.D. 324 onwards)," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Saturday, April 1.

Edinburgh Architectural Association: Visit to St. Mary's Cathedral, at 2.30 P.M.

TECHNICAL EDUCATION AND RESEARCH.

AMONGST the members of the architectural profession, as well as amongst those whom it is their function to direct in building operations, we fear it must be admitted that sound knowledge of the scientific aspect of building is for the most part very far to seek. There is good reason for this failing. In the mentality of the artistic temperament it is usual that the synthetic mood of thought predominates over the analytic, things are taken as they are, precedents are followed with a slavish fidelity that stifles initiative. As a result of this habit of mind we find a conservative adherence to antiquated procedure that is exhibited not only in design, but in the employment of construction and material in the manner and with the limitations handed by tradition from past ages. Still do architects specify that the fir timber in their buildings shall be the "best Memel, Dantzic, or Riga," still do they ask for windows to be glazed with "patent plate." Steel and reinforced concrete are things to be avoided as far as possible, and when they become absolutely imperative a consulting engineer must be employed. How many architects are competent to write a specification in detail for the applications of electricity to their buildings on which their clients to-day insist? Throughout the whole category of modern applied sciences the specialist must be entrusted not only with the execution of the work, but with its conception and determination. There is, indeed, a necessity most urgent for more thorough technical education to enable our architects even to appreciate the capabilities and the limitations of applied science in building. The lack of knowledge by architects in this country is reflected in the character of the eloquent and persuasive gentlemen who canvass for their employers' manufactures or merchandise to be included in specifications. For the most part such canvassers lack anything like a moderate, much less thorough, knowledge of the wares they are sent out to sell. They rely, and presumably sufficiently, upon a statement of the thousands of feet their firms have already supplied. They are quite surprised and nonplussed when they do happen to meet an architect who knows more than they do about their class of goods, and puts them through their facings. The result of the want of scientific knowledge in architects has been the flooding of the building trade with inventions and manufactures made in Germany, which have gained a footing by lavish expenditure of capital in commercial methods.

In technical research on matters connected with building we in this country are an immense distance behind America and Germany. The Royal Institute of British Architects occasionally, through its Science Committee, makes tests on brickwork or some other matter, but these investigations are few and far between, in spite of the obvious advantages derived. The reason usually assigned is want of funds. Useful work has been done by the British Fire Prevention Committee in connection with fire resistance. Some few isolated and disconnected experiments are made here and there by individuals or corporate bodies, but their results are not sufficiently published, and there is consequently much overlapping and repetition and too little diffusion of knowledge obtained.

We are all aware that there is a general desire in all branches of national industry to oust the enemy from that economic advantage which he has obtained in our commerce and manufactures during the last quarter of a century, and the fruits of which advantage have financed his present onslaught on the liberty and freedom of the world. It is recognised that we can only achieve our object by a great improvement in our methods of technical education and research, and, as we have pointed out, in the building trade such improvement is imperatively necessary.

In an admirable paper by Dr. William Garnett on "The Sphere of the Scientific and Technical Press in relation to Technical Education and Research," addressed to a sectional meeting of the Institute of Journalists, the author referred to the necessity for establishing systematic courses of training for the industrial statesman or leader of industry, by whom, in the building trade, we understand the architect, as well as for the skilled workman. He spoke also of the need for a wider diffusion of scientific knowledge amongst the general public who are outside the circle of the technical experts in any particular industry; in architecture, we take it, our clients need to be instructed so that they may appreciate the technical knowledge of the architect, both in art and science.

It may not be generally known that a wise step has been taken in July last by the Minister of Education in appointing an Advisory Council for Research whose duties are thus set forth: "The primary functions of the Advisory Council will be to advise the Committee of Council on: (1) Proposals for instituting specific researches; (2) Proposals for establishing or developing special institutions or departments of existing institutions for the scientific study of problems affecting particular

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industries and trades; (3) The establishment and award of research studentships and fellowships." Our readers will be interested to know that at the present moment a committee of the R.I.B.A. is engaged in preparing for submission to the Advisory Council proposals of matters connected with building in which research is needed.

In the paper to which we have referred, Dr. Garnett suggested that in industrial research there are in general three stages: (1) Inception. The purely scientific investigation conducted with no definite practical object; (2) Adaptation and standardisation. The practical adaptation of the discovery to a manufacturing process on a small scale, leading through testing and dealing with practical difficulties to the standardisation of processes and parts; (3) Commercialisation. The adaptation to manufacture on a commercial scale where cost of production is a factor.

A very important factor in a trade competition between the British Empire and its enemy upon which we have frequently spoken was advocated also by Dr. Garnett—the establishment of an industrial bank or banks, which would finance the inventor and manufacturer in their commercial exploitation of new inventions or processes. It has been by such assistance that the numerous German introductions to the building trade of this country have been rendered successful. Dr. Garnett suggests that the assistance of the industrial bank should follow the recommendation by the Research Council for a State patent to an invention of sufficient merit.

NOTES AND COMMENTS.

For a period approaching fifty years the printers of this journal have been the well-known firm of Spottiswoode & Co., and a personal paragraph relating to them is almost like the penning of a paragraph relating to ourselves. Alterations in the personnel of the two firms Spottiswoode & Co. and Gilbert Wood & Co. have taken place from time to time, but death has usually been the cause. To-day's alteration is the absorbing of another firm, and from this date the firm of Spottiswoode will be known as Spottiswoode, Ballantyne & Co., Ltd. We gladly take this opportunity of placing on record our appreciation of our printers, of the excellence of their work, of the universal courtesy shown from the heads of the firm, the overseers of the various departments, and the men themselves. In the changes which take place in business life it is probably somewhat unusual to find two firms still so closely connected as printers and publishers. To the old firm under its new title we offer our congratulations and our wish for continued success.

Despite some opposition, the Dublin Municipal Council has adopted the reports of the Housing Committee, which recommended the borrowing of money for the purpose of building houses for the working classes, and also the placing of £8,000 on the city rates for the ensuing year for that purpose.

At a General Assembly of the Royal Scottish Academy held last week—Sir James Guthrie, the president, in the chair—the following were elected Associate Members of the Academy: Painters—Mr. Henry Lintott, 19 St. Bernard's Crescent, Edinburgh; Mr. David Alison, 11 Melville Place, Edinburgh; Mr. Archibald Kay, Woodend, Callander. Architect—Mr. James A. Morris, Savoy Croft, Ayr.

Mr. James A. Morris, born in Ayr in 1857, is a son of the late Captain A. Morris. He was educated at Ayr Academy, Glasgow School of Art, the Slade School, University College, London, and the Royal Academy Schools. He commenced practice as architect in his native town, removed to London on business in 1881, and, returning to Ayr five years later, has continued there since. Mr. Morris has been the architect of many important buildings in Ayrshire and in England. He early took a practical interest in archæology. He conducted the excavations at Crossraguel Abbey, Kirkoswald, under the auspices of Ayrshire and Galloway Archæological Associations, and wrote an illustrated monograph on the Abbey, which, along with the charters edited by Mr. F. C. Hunter Blair, Edinburgh, was published in two volumes. When the Town Council of Ayr proposed to replace the Auld Brig of Ayr by a new bridge, Mr. Morris opposed this proposal, and it was largely on his initiative that Lord Rosebery took up the matter, and that the Auld Brig was saved by subscriptions from all parts of the world. Mr. Morris, who personally superintended the work of preservation, wrote an illustrated volume giving the history of the Brig, and an account of the preservation—a work which cost about £12,000. The new associate is a F.R.I.B.A., a member of the Art Workers' Guild, London, and a F.S.A.Scot. The Board of Trade twice selected him as a representative British architect to exhibit in international exhibitions.

It appears that, although a good deal of damage has undoubtedly been done to the exterior of Rheims Cathedral, the vaulting, walls and towers still remain practically intact, together with the organ, clock, pulpit, and much of the sculpture. There is therefore a possibility of restoration.

Architects have been specially invited to take up munition work, as their experience in the accurate use of instruments makes them particularly capable, with the minimum of instruction, as tool-setters. But there is another side to the question. Munition work is frequently hard work, and before undertaking it any man of over military age should consult a physician. A Liverpool artist of some repute, Mr. David Jenkins, as he could not join the Colours, resolved to "do his bit" by working at munitions. The arduous and heavy nature of the unaccustomed work brought on a strain, and his death has occurred at the early age of forty-nine years.

Mr. Jenkins first exhibited at the Royal Academy in 1885, when he was in his seventeenth year, the picture being entitled "February Morning." He went to Liverpool in 1890, in which year his work was first shown in that city, and since then he has been a fairly regular contributor to exhibitions at the Walker Art Gallery, the Sandon Studios, and the Liverpool Academy. He also occasionally sent to provincial exhibitions, but of late years he never sent to the Royal Academy. He was in 1913 nominated by the Liverpool Academy to represent them on the Hanging Committee of that year's autumn exhibition.

In a lecture on the subject of "History in the Windows of the Priory Church," delivered at Great Malvern, Mr. G. McN. Rushforth, F.S.A., dealt with the legend of St. Werstan, to the effect that St. Werstan fled from Deerhurst Abbey, when it was destroyed by the Danes, to Malvern, and founded a hermitage there. The only two absolute pieces of history that were to be found, upon which this legend was based, were that which was set forth in the stained glass of the window and the historical notes made by John Leland upon a visit to Malvern some years before the dissolution of the Priory. He referred to the theory advanced by Canon Deane—predecessor of the present vicar of Malvern—in his book "A Short Account of Great Malvern Priory Church," that St. Werstan was purely an imaginary person, and said that he was disinclined to accept that view, and rather inclined to the belief that St. Werstan was, after all, a real personage. He also described the west window, and dealt in detail with the benefactions of the Beauchamps, the Warwicks, and the Nevilles. The lecturer referred to the window in the north transept, which is generally supposed to have been given by Henry VII., and advanced the idea that this monarch was not a very beneficent man.

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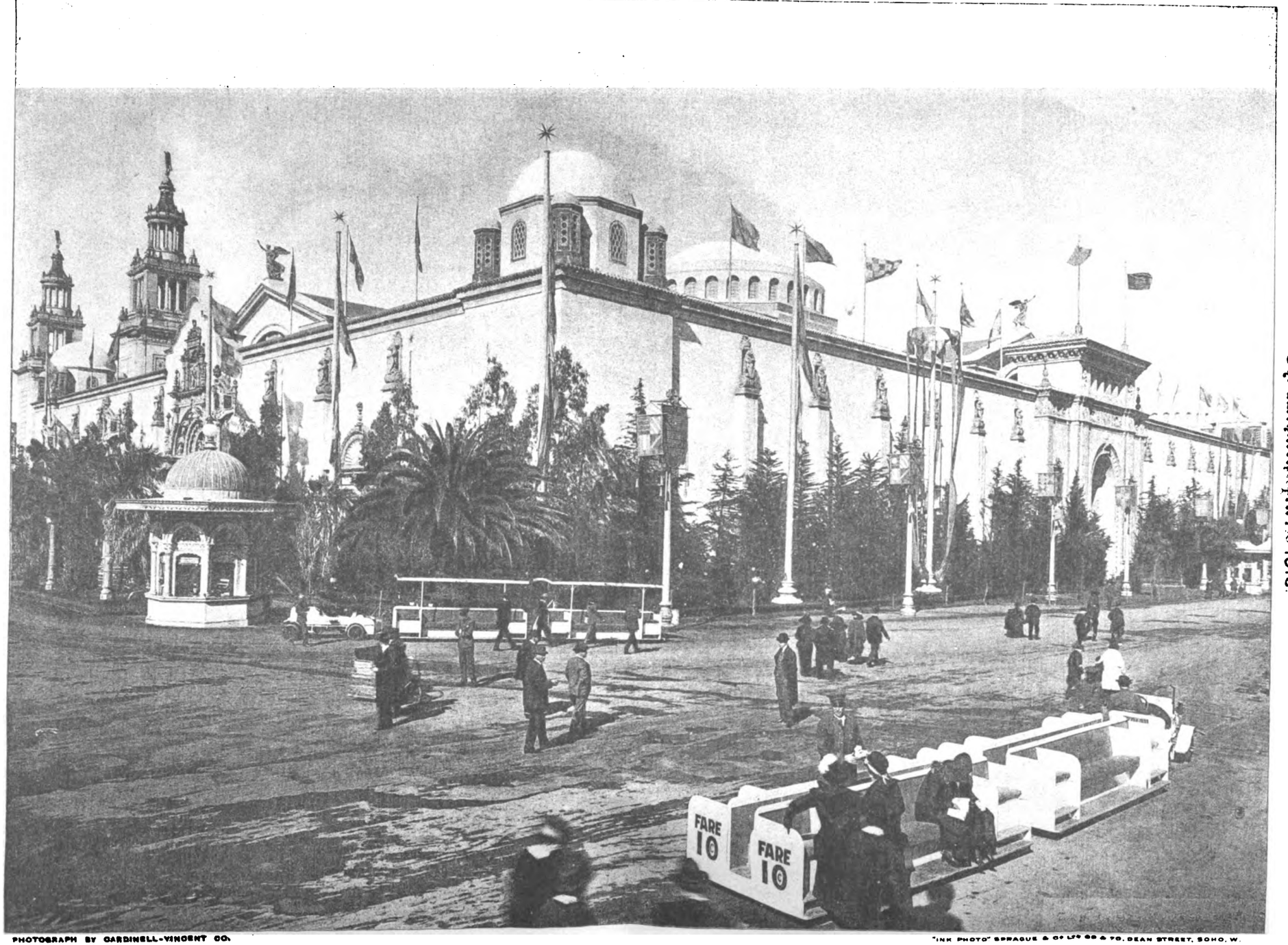
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NATIONS OF THE EAST—COURT OF THE UNIVERSE. PANAMA-PACIFIC INTERNATIONAL EXPOSITION.

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COURT OF PALMS, PANAMA-PACIFIC INTERNATIONAL EXPOSITION.

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Mr. Hippolyte J. Blanc, R.S.A., in a paper on Lanercost Priory, read to the members of the Scottish Ecclesiological Society, described this monastic house as a foundation of the Augustinian canons. When Henry II. in 1167 A.D. wrested Cumberland from the Scots, he granted to Robert de Vallibus the lands of Lanercost, and it was this noble who was the founder of the Priory, which was consecrated in 1169 to the "blessed Mary Magdalene." In 1280 Edward I. and Eleanor, his Queen, were received at the Priory with considerable ceremony and great hospitality; in 1306, when the same monarch led his army against Scotland, he was too feeble to go further than Lanercost, where he remained for about a year. Before leaving, the King presented other revenues to the Priory to assist to restore its status, which had been much impoverished by the plunderings of the opposing armies. The church of the Priory took about seventy years to build. The earlier portions showed lingering features of Norman character when the first pointed style was just emerging from the Norman. There were two distinct sections of building distinguishable. The second style was carried on in fully-developed Early English, reaching a completion about 1260, but it was interesting to find such harmony of form and details as were manifest throughout. The Priory suffered greatly from Border warfare. The greater part of it is a ruin, though the nave is still used as the parish church.

Louis Raemaekers, the famous Dutch cartoonist, has generously drawn for the National Committee for Relief in Belgium one of the most remarkable and certainly the most heartrending of all the "War Posters."

The misery of the millions now in Belgium whom the Germans refused to feed has inspired this notable artist to his finest effort. A Belgian woman, with a ragged red cloak over her shoulders, is holding tightly to her breast an infant in a shawl. Around the child is clasped the mother's hand—a hand which spells starvation. In the woman's face there is the infinite sorrow of motherhood, driven to despair by German inhumanity, and the pitiful helpless yearning to relieve the child's suffering.

But it is in the face of the child that Raemaekers has told the full horror of the tragedy of Belgium. The staring horror in the eyes that look up at the mother makes one shudder and turn away to think what might have been in England. With remorseless realism Raemaekers, in this infant of pain, has visualised to the world the infamy of Germany.

The poster, which is artistically reproduced, has this laconic heading: "In Belgium." Underneath, appears the one word "Help." Any of our readers can secure a copy of the poster free of cost by sending a postcard to the Hon. Secretary, National Committee for Relief in Belgium, Trafalgar Buildings, Trafalgar Square, London.

ILLUSTRATIONS.

PANAMA-PACIFIC INTERNATIONAL EXPOSITION.

A DESCRIPTION of the buildings we illustrate will be found in our article on the Panama-Pacific International Exposition.

THE Council of the Surveyors' Institution has set up two strong committees to consider the problems likely to arise at the termination of the war, more particularly in connection with possible unemployment after the war of army and munition workers; and dealing with the question in the light of the special knowledge possessed by surveyors, as distinct from other professional men or from the representatives of trade and industry, to suggest preventive or curative schemes. One committee will deal with the subject from the urban standpoint, and the other from that of the rural and agricultural districts, but arrangements have been made by which they will act together, either as a single committee or by means of joint sub-committees, where matters of general principle are involved.

THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION, SAN FRANCISCO.

IT was an irony of Fate that this world Exposition, organised to celebrate the successful cutting of the Panama Canal, begun in 1904 and finished ten years later, one of the greatest triumphs of man over nature and of engineering skill, should have opened its gates amidst the devastation of a war involving half the nations of the earth.

The Panama-Pacific International Exposition was opened on February 20, 1915, and was closed ten months later. In size, planning, and execution it was an achievement worthy of the great event which it sought to commemorate. The building of the Exposition city was entrusted by the United States Congress to the Municipality of San Francisco, acting in conjunction with the State of California; and the cost, including the exhibits in the various palaces, fell not far short of £13,000,000, of which sum the favoured city contributed within a few days about £5,000,000. For its erection thousands of workmen were employed over a period of fifteen months. This vast army of employees, under the inspiration of a band of directors representing the greatest minds in architecture and engineering in the United States of America, and with the aid of sculptors and artists of world-wide renown, transformed the sandy site of 635 acres into a veritable paradise of majestic buildings and lovely gardens, which for artistic excellence, beauty of conception, and harmonious treatment have not been surpassed on so large a scale in the modern world.

No better site could have been chosen than that upon which the exhibition palaces and grounds were built. It formed a natural amphitheatre within the confines of the famous Golden Gate. To the north lay the beautiful waters and islets of San Francisco Bay; and behind it, to the south, rose up the panorama of the everlasting hills with their newly-constructed residences dotted over the slopes under the ægis of the towering Tamalpas Mountain, whilst it was skirted at each end by the rising forest lands of the Presidio Reservation Camp.

The underlying unity and harmony in the expression of the architectural schemes for the main exhibit palaces, together with the fact that these buildings housed the representative results of man's achievements in all their varied forms from the earliest times to the present day, made the Exposition universal in its scope and international in its appeal. The grounds were planned out in four different districts or zones. In the nobility and beauty of their architecture and external colour decoration the eleven exhibit palaces and Festival Hall, with their several courts and gardens, dominated the entire scheme from their central position in the grounds. On one side they were flanked by the various buildings dedicated to the service of the different American States and those of foreign countries; on the city side by the amusement section; the small palaces adjoining the aviation grounds, stadium, and race track, and live stock exhibit, ending in the Presidio Military Reservation, where the great military tournaments and drill carnivals were held.

Adding to the grandeur of the architectural conception was the delightful colour scheme executed under the inspiration and direction of Mr. Jules Guerin. The palaces were finished in warm smoked ivory-hued imitation of Travertine marble, producing a restful effect, with niches, lattices, colonnades, roofs, and flagstaffs, done in pastel tones of the primary colours. The application of the large colour masses was in all respects a great success, and did credit to all concerned in the execution of the ideas of the artists of the colour department. On the domes a green colour was employed, reflected beautifully in the sea-green tone of the Palace of Horticulture at night. The roofs were done a reddish-yellow tone, this medium being most appropriately expressed in the decorative scheme for the great triumphal Arch of the Rising Sun, embodying the bright colour tones of the East, which it was to render symbolically. For the concaved sides of the colonnades

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a violet blue was the colour motif, with reds and golds at the back of the columns and their capitals respectively. The colour in more than one case indicated the name of the particular court, as in the Pink Court. No detail was left out to give a general unity to the colour scheme, even the pavements and walks being embodied in the calculations of the head of the colour department, as well as the beds of the fountains and lagoons, the latter to reflect their beautiful tones through the translucent waters. In addition, there were thousands of red Spanish flagstaffs, from which flew myriads of specially gauze-dyed, multi-coloured, ribbon-like flags and banners; but dwarfed in point of beauty by the numberless crystal jewels, placed as part of the colour scheme to ornament the palaces and to throw in relief the architectural lines. Acting as a background to the general colour motif were the mural decoration schemes, eight of the panels being the work of Frank Brangwyn, A.R.A., measuring 24 feet in height. The other decorative paintings were executed by the following well-known artists: Frank Dumond, Childe Hassam, Charles Halloway, Robert Reid, Edward Simmons, and Mr. de Leftwich Dodge.

Contributing, though in a lesser degree, to the magnificent colour scheme, were the tintings of the variegated tulips in the flower-beds of the Exposition gardens. In their selection of Mr. John McLaran, the landscape gardener who made possible the existence of the beautiful Golden Gate Park out of the sandy morass of the original site in San Francisco, to direct the making of the landscape gardens and ornamental flower-beds in the grounds, the Exposition authorities made a wise choice; and it was, in no small measure, due to his wonderful knowledge of the gardener's art that the unrivalled exhibition of flowers and plants from every quarter of the globe was made possible. In the gardens and courts millions of flowers blossomed out day by day, and no plant not in full bloom was allowed to remain on the grounds during the whole tenure of the Exposition. Every avenue was planted with its allotment of trees, making oases of beauty even amidst the delights of a paradise outrivalling the wizardry of the exquisite palaces of the "Arabian Nights." Thousands of rare tropical trees were dispersed along the drives and avenues. There were palms, olives, and eucalypti in abundance, with orange and cypress trees shading the garden walks; and completing the gift to their patron Venus were the exhibits of thousands of mesembryanthemum vines around the outer portions of the Exposition grounds.

Remarkable in point of attraction and effectiveness at night was the electrical illumination, directed by Mr. W. D. A. Ryan, chief of illumination. It was carried out on a new system of flood lighting, producing a soft effect from behind screened sources; and, avoiding the blurred light, revealed in all their beauty the façades and walls of the palaces and the natural colours of the flowers. To give enhanced beautiful effects to the hundreds of sculptural pieces and mural paintings, they were illuminated at night with numberless novel lighting fittings. Concealed batteries were installed, giving forth powerful though subdued rays of light, reflecting the beauty of the Tower of Jewels under the night sky by their action on the hundred and odd thousand of hand-cut glass prisms, which, vibrating at their great height with every movement of the winds, gave them the appearance of myriads of twinkling stars in the firmament. Somewhat akin to the scenic marvels associated with the Norwegian sky were the effects of the auroras of ever-changing colour flashed above the Exposition grounds night by night from the shore of San Francisco Bay by means of powerful electrically worked searchlights, producing their weird shades of blues and blacks, greys and greens, and purples.

The entire series of buildings and grounds, covering an expanse of approximately one square mile, were enclosed within a magnificent hedge 25 feet high, consisting wholly of thousands of boxed succulent vines arranged tier upon tier, obtained principally from South Africa. Within this wall of plants was another enclosure—the great wall of the Exposition, 65 feet high, designed by Mr. William B. Faville in the simple character of the early mission walls of the Spanish priests who came to San Francisco in the latter half of the eighteenth century. This wall surrounded the eight principal palaces, and served also as the outer walls and façades of these buildings. In arrangement they formed a quadrangle, divided up by one long avenue going east and west and intersected by a series of avenues striking across north to south, the division thus created making possible the erection at the intersections of the three magnificent courts, on which no expense and effort was spared to make them truly representative of the greatness of the Queen of the Arts and her handmaidens Sculpture and Painting.

The Exposition from the city side was approached through a gateway, which opened on to the extensive South Garden, having a length of not less than 3,000 feet, and fashioned with playing fountains on each side. Majestic in its strength and beautiful in the repose of the architectural design was the Main Tower or Tower of Jewels, forming the entrance gateway to the eight main palaces at the end of the central avenue approach. This tower, designed by Messrs. Carrère & Hastings, of New York, was the dominating architectural feature of the Exposition. It rose to a height of 433 feet, and was studded with 125,000 jewel-like prisms. The balcony was enriched with statuary of mounted horsemen in groups, whilst arranged on obelisks, resting on the entablature of the front entrance limestone columns, were stationed symbolical statuary. On the extreme left of the entrance approach was situated the Palace of Horticulture, designed by Messrs. Bakewell & Brown, of San Francisco. As will be gathered from the excellent illustration reproduced, the large dome surmounting the structure was entirely of glass, being 152 feet in diameter and extending to a height of about 180 feet. Glass was also the main material of construction for the entire palace, which covered an area of over five acres, having an extreme length of 672 feet and width of 320 feet. Internally, on either side were aisles 50 feet in height, which ran parallel with the central nave, 80 feet high, extending the whole length of the building, wherein were displayed all the most beautiful and rare, as well as the most common examples of the horticulturist's and floriculturist's art; and in the greenhouses thousands of rare plants were cultivated for use upon the grounds. To the extreme right of the South Garden was the Festival Hall where, in the main hall, having accommodation for three thousand people, massed choir festivals were held and organ recitals were given, played upon a pipe organ considered to be one of the seven largest in the world. The Festival Hall was designed by Mr. Robert Farquhar, of Los Angeles, and took the form of the French theatre style of architecture, having one large dominating dome dwarfing by its size a number of small domes and turrets, the latter being filled in with statuary.

(To be concluded.)

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—XII.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

VERONA, for more than two hundred years after the early part of the sixteenth century, was granted a well-deserved respite from movements of political moment. Although it was very evident that this unfortunate place was to be made to suffer in other directions, for in 1630 a great plague carried away more than half of the population, and in 1757 the great river Adige overflowed its banks and caused great damage.

More disturbed pages occur in the history of this town towards the close of the eighteenth century, when Bonaparte took possession of it, and after a number of

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further changes this much troubled place fell to the Austrians in 1814, when the strength of the English people rendered the domination of Napoleon no longer possible.

The War of Independence began in 1848, but it was not until 1866 that King Victor Emanuel II. and his sons were welcomed in the great amphitheatre of Verona that the troubles of this much disputed territory came to an end, unless the great war now raging is destined to still further effect changes. The architectural history of Verona is of considerable importance, owing to its mediæval buildings and as the birthplace of Fra Giocondo (1435-1515), one of the most celebrated and able architects of the early Renaissance.

His works are scattered over Italy, as well as in Paris. Verona will also be well known, so long as architectural monuments are the objects of admiration, as the home of Michele Sanmicheli (or San Micheli), 1484-1539, another very famous architect, and one who was responsible for many of its famous and magnificent edifices.

Sculpture and painting historically also had a home of much consequence in this ancient city.

Verona has a population of about 62,000, apart from its garrison of some thousands of men, and is the capital of a province.

The river Adige, upon both banks of which the city lies, has been enclosed by tall embankments since 1895, and has played an important part in the history of the city through which it flows, and which it divides into two distinct portions. It was in the year 589 A.D. that this mighty river overflowed its banks for the first time recorded, and the terrible inundations that ensued submerged the district round Verona for miles, and caused great loss of life and property.

This fast-flowing river rises in Lake Ressen in the South Tyrol, and is joined on its way by a large number of mountain torrents and streams.

Flowing through the Brenner Pass, narrow and deep in places and broadening as it passes through lakes and wide flat valley-bases, until it eventually assumes a broad tempestuous volume of seething waters, it rushes rapidly through the city of Verona, and after a journey of 190 miles the river empties into the Adriatic.

Verona lies near the hills of Altipiano dei Lessini, the vine-clad hills to the north of the city, plateau of extensive pastures stretching to the south of the Gruppo di Posta on the Austrian frontier.

Verona is, as may have been gathered from the notes previously made, a fortress of some considerable note and strength, and is besides the largest and most beautiful town of the Venetian *terra firma*, having a fairly extensive trade.

To the English traveller, having little time to spend in exploring this old city, it is useful to know that for a small charge of two francs, a municipal ticket or series of tickets ("biglietto" cumulative) may be obtained at the railway stations, and a number of the principal hotels, admitting to all the municipal places of interest.

This ticket admits to the Tower of the Municipio, Tombs of the Scaligers, Amphitheatre, Juliet's Tomb, Museo Lapidario Maffeiano, Museo Civico, and Roman Theatre.

By availing oneself of the privileges offered by this ticket, and taking advantage of one of the many vehicles plying for hire outside of the Stazione Porta Véscovo, quite a number of places of considerable interest may be visited within a few hours after arrival at Verona.

If time is not of very great consequence and the weather is fine, as it was on the occasion of the writer's visit, it is preferable to spend a few hours daily wandering at will through this wonderful old town (taking advantage of the municipal ticket aforesaid, nevertheless).

Leaving the station before mentioned, and crossing the open space in its front, the walled city is entered through the Porta Véscovo, in the centre of the eastern boundary wall, midway between the Bastione delle Maddalene and the Bastione S. Toscana, and passing through the Via Vento Settembre, one soon reaches the first edifice of note, San Paolo di Campo Marzo, with its facade ascribed to Al Pompei (about 1763). This church contains Madonnas, with Saints, by Paolo Veronese and others.

Turning to the south at the Ponte delle Navi, there rises the Palazzo Lavezzola Pompei, on the Lungadige Porta Vittoria, erected in 1530 by Sanmicheli.

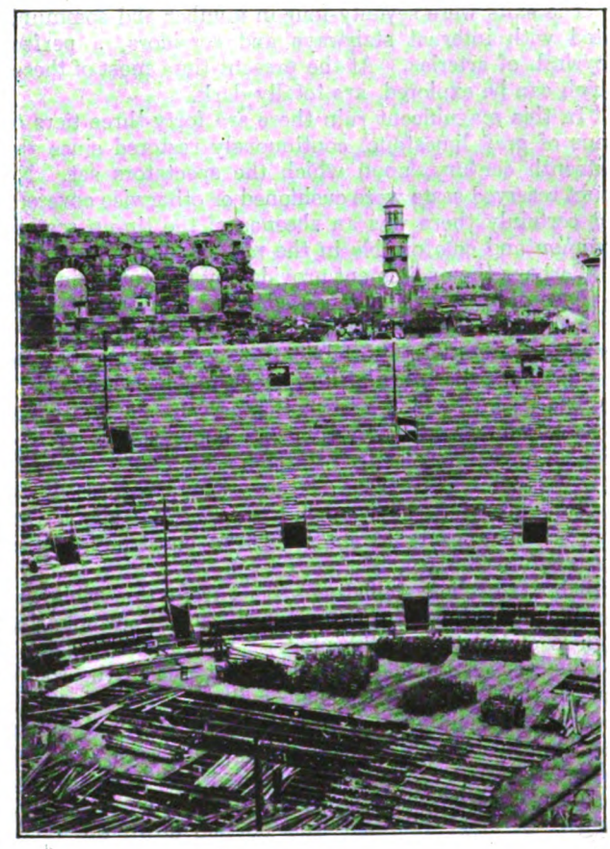
This building illustrates very powerfully the genius of its architect, that great artist Michele Sanmicheli.

Its simple rusticated lower storey and rich colonnaded upper storey, with the graceful fluted Doric columns and heavy keystones to the window arches carrying the overhanging entablature, are all characteristic of the hand of its creator.

The Palazzo Pompei has been the Museo Civico since 1854, and contains Roman antiquities from Verona, prehistoric antiquities from the Lago di Garda, mediæval sculptures, architectural fragments, natural history collections, &c.

In the upper floors is the Pinacoteca or picture gallery, with over 2,000 pictures of the Veronese and other schools, frescoes, and sculptures, &c.

Further south, close to the Porta Vittoria, stands the Cimitero, typical of Italian cemeteries, laid out on a gorgeous scale in 1828, approached through an avenue



THE ROMAN AMPHITHEATRE, VERONA.

of cypress trees, leading to a magnificent gateway adorned with groups in marble by Spazzi, and with its interior of Doric colonnades and its domed church.

Crossing the Ponte Aleardi over the Adige, the broad Via Pallone is entered, extending from this bridge to the Municipio and skirting the wall of the citadel of the time of Gian Galeazzo Visconti, the ruler of Verona, after the days of the Scaligers. Before proceeding further, a visit should be made to a modern Romanesque cloister in the Campo di Fiera, built on the site of a Franciscan monastery, and containing a mediæval trough called the Tomba di Giulietta (Tomb of Juliet), and generally considered a fraud. There is also a monument here to Shakespeare. The Municipio just named was formerly a guard-house, and was erected in 1836-38 in the Classic style by Giuseppe Barbieri. The fine, spacious

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Piazza Brà, or Piazza Vittorio Emanuele, is now entered.

A busy square, connected by a number of narrow streets or lanes with the Corso Cavour, one of the main arteries of the city. The principal attraction in this square is the famous Roman amphitheatre or arena, a relic of the days when Roman influence held the power in Verona.

There is no great certainty with reference to the date of the erection of this huge structure. Some writers state that it was erected under Diocletian about A.D. 290; but some wish to ascribe it as the work of the Etruscans. Whatever its age may be, one thing is certain, it is very old.

This arena was built of huge blocks of stone, and is in plan elliptical, 167 yards long and 134 yards wide. It was 105 ft. in height.

The arrangements for the ingress and egress of the 25,000 spectators it was designed to seat were all that could be desired.

The outer façade consisted in its first days of four storeys; but since an earthquake in 1814 the only remains of the outer wall, with its three storeys, are four arches on the northern side.

Great care has been exhibited to keep this building in its interior in the perfect state of preservation it is to be found in to-day.

The exits were seventy-four in number and communicated with internal stairways and corridors, a perfect labyrinth of arteries. At the present time most of these, which can be explored, are totally dark.

In this magnificent ruin there are forty-three tiers of steps of grey limestone, continuously restored since the sixteenth century, upon which the spectators sat. No doubt reserved seats were cushioned or otherwise covered; but certainly there was an absence of the tip-up seat so common and comfortable in the present day.

Perhaps the excitement provided by the entertainment in those old-world days rendered extra comfortable seats superfluous. This arena was in the centuries gone by the scene of many a gladiatorial combat, and wild beasts were also in the earlier days of its history much used.

The uses to which such buildings were generally put were largely typical of the habits and customs of the peoples of the various ages through which such erections have passed. This arena, it is written, witnessed the martyrdoms of St. Fermo and St. Rustico, about A.D. 300, which appears to show that its construction took place before 290 A.D.

with bronze reliefs depicting scenes from the Bible and the life of San Zeno, the space under the surmounting arch is elaborately ornamented.

The Museo Lapidario Maffeiano stands in the courtyard of the Teatro Filarmonico, built in 1716 and rebuilt in 1760, and adjoining the same Piazza. This building was founded by Scipione Maffei, the historian, and contains Etruscan, Greek, Roman, early-Christian, and mediæval inscriptions, antique sculptures, etc. Passing from the Piazza through the Portino down the noble Corso Vittorio Emanuele, with its statue of Michele Sanmicheli, "grande nella architettura civile e religiosa massinio nella militare," with the magnificent Porta Nuova forming the terminal feature, and standing midway between the Bastione St. Trinità and the Bastione dei Riformati, the Stazione Porta Nuova may be entered here.

The Porta Nuova, the work of Sanmicheli, is a beautiful gateway, severe and simple, with its great keystones so characteristic of this master's work.

Selecting the avenue to the north-west, the Porta del Palio is reached, again a delightful composition of the same master-hand, with its fluted Doric columns on the exterior and the rustication on the interior passing through the columns which have no bases. Passing the Ospitale Militare on the way, and following the Stradone di Porta Palio, the Vicolo San Bernardino is approached. This is a very fine church with pretty cloisters and many beautiful frescoes, and also the exceptionally grand Cappella Pellegrini, a fine chapel in the Renaissance style, Sanmicheli's most famous and certainly most perfect creation.

Verona's greatest architect excelled himself in this little circular chapel, which in every line and every detail is magnificent.

Further to the north, in the poor quarters of the city, is the Piazza San Zeno, with that famous Romanesque church of San Zeno Maggiore, the finest without doubt in the whole of Northern Italy.

This perfect masterpiece of the Romanesque style, pure, simple, and dignified, is the most beautiful work of art of Veronese mediævalism, its date being the middle of the twelfth century. The choir, it is recorded, was rebuilt in 1386-98, and the entire church restored in 1870.

This church is of noble proportions, and the various works of restoration and rebuilding have not, as is the case, unfortunately, with so many such works, injured the original fabric or interfered with the original conception.

The large circular window over the main entrance is particularly fine, representing the wheel of fortune, formed of concentrically arranged semi-circles, carried upon columns, adding to the beauty of this Lombardic-Romanesque façade.

This rose window was executed by Briolotus, a sculptor of some considerable note at that time.

Below is a portal of much grace and originality. A highly decorated semi-circular head with a pedimented canopy crown this portal, and the latter is carried upon two columns, which in turn rest upon the backs of crouching red-marble lions, a particularly quaint and typical treatment of this period.

Above are the words "Dextra Dei gentes benedicit sacra petentes." The west front of this church is of marble of reddish hue, and the sides are of a striped or coursed treatment of layers of marble and bricks in alternate courses.

Over the entrance doors, which are heavily panelled with bronze reliefs depicting scenes from the Bible and the life of San Zeno, the space under the surmounting arch is elaborately ornamented.

Within this beautiful Lombardo-Romanesque basilica, looking from the elevated west doorway, one is impressed by the grand and noble and reverent interior and the perfect harmony of its lines and the graceful proportions of its arches and columns, with their foliaged capitals.

Entering through this west door, some ten steps are descended to the level of the nave, which extends between the two aisles, to two flights of steps, the first leading down to the crypt and the other leading up to the high altar and choir. The three arches, supported upon pairs of round shafts with sculptured capitals, over twenty steps, leading down to the crypt, are semi-circular, and present a very effective and artistic entrance to this low-lying portion of the church. The vaulted roof of the crypt, which is supported by forty round columns with quaint capitals, is a particularly fine specimen of ninth-century work, the only relic of the original church.

There are in the choir some old carved walnut seats attributed to the fourteenth century, and the quaint and curious wooden ceiling of the nave of the same century is of much interest.

A number of very beautiful and elaborate frescoes, a fine choir screen, and an altar between two columns of brown marble resting upon a lion and a bull, are among the many items of considerable interest in this old temple.

The cloisters of the twelfth century are of great beauty; they consist of coupled columns of red Verona marble with enriched capitals.

The stately campanile which rises detached, but close to the church, is of slender proportions and of great height. Its date is eleventh-twelfth century.

This wonderful erection, which is shown in the illustration, is wholly of brick, and harmonises well with the

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church, is surmounted by a cone-shaped spire and four corner pinnacles. This campanile—which was begun in 1045 and finished 133 years later—is one of the finest in Italy, and forms a glorious picture standing out clearly against the blue Italian sky.

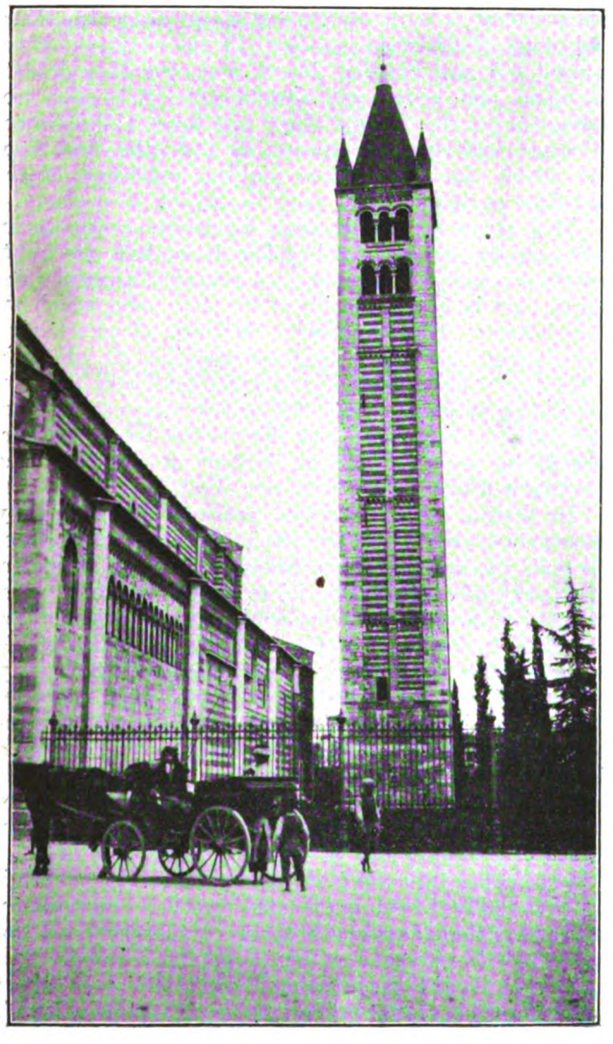
The summit of the square portion has a quaint arrangement of a double row of three arched openings.

On the north side of this church stands a massive square brick tower with its forked battlements, which, together with the cloisters, is all that is left of the Benedictine monastery which was suppressed in 1770, and which was continually inhabited by kings in the olden days.

To the north-west of San Zeno stands the Porta San Zeno, another of those entrance gates to the city, erected in 1540 by Sanmicheli.

This gateway stands close to the Bastione San Zeno.

Leaving San Zeno and its surroundings, the return journey from this portion of the city is made by the embankment of the Adige. The Castel Vecchio is next reached, a structure of very exceptional interest, and



CAMPANILE OF CHURCH OF SAN ZENO MAGGIORE, VERONA.

with a history similar to that associated with so many of the buildings in Verona, and brim full of stirring incidents.

Built between 1353 and 1358 as the castle of Cangrande II., and forming the entrance to the imposing, picturesque pinnacled bridge across the river, this structure was erected by this prince of the House of Scala. This castle is now used as a barracks.

Adjoining in the Piazzetta di Castel Vecchio stands the famous Palazzo Canossa, with its fine colonnaded court and portico, one of the finest palaces in this neighbourhood and the work, again, of that master-architect Sanmicheli.

Its main saloon on the upper floor has a great fresco in the vaulting by Tiepolo.

Still in the Corso Cavour, further on rises the church of San Lorenzo, a small but interesting example of the Roman-Lombardesque style, with round towers on the façade.

This church stands back from the roadway and is reached through an archway and quaint courtyard. The plan is an interesting example of the Roman basilica, and the round arches of the interior are striking, being supported upon columns and pillars of Veronese and other marbles.

The Corso Cavour is one of the principal streets in the city, and is exceptionally rich in architectural monuments, among which are the following, viz.: The beautiful baroque Palazzo Carlotti of 1665 date; the sixteenth-century Renaissance Palazzo Scannagatti, now the Banca d'Italia; the Venetian-Gothic Palazzo Pozzoni of the fourteenth century; the church of Santi Apostoli with its very ancient tower and Romanesque apse; and the eighth-century church of Santa Tenteria.

Then the Porta dei Borsari is reached, one of the town gates erected under Emp. Gallienus, A.D. 265. This, as the illustration will show, is a fine Roman gateway, with its double archway and two storeys of window openings overhead.

In these modern days this relic of days gone by has a strange appearance, crossing the roadway from side to side, and with one set of tram rails passing under one of its arches—the modern and the antique together—it strikes one as strange, and unlike many old Roman gateways out of place.

At first sight this strange structure has the appearance of the one remaining wall or side of an old three-storeyed structure which had at one time stood astride the roadway.

It is a fine piece of architecture, with its Corinthian pilasters pedimented over the arches and strange combinations in its upper parts.

Following to the left a narrow artery, the Via Sant' Eufémia, is soon reached, wherein stands the thirteenth-fourteenth-century Gothic church of Sant' Eufémia, with its imposing façade.

(To be continued.)

NOTTINGHAM AND DERBY ARCHITECTURAL SOCIETY.

ON Tuesday evening, March 14, the fifth meeting of the Session was held at the School of Art, Nottingham, when the Vice-President, Mr. H. G. Watkins, F.R.I.B.A., delivered a lecture on "Lincoln City and Cathedral" before a large audience, which included lady friends and the students of the School of Art who had been specially invited.

The President, Mr. Harry Gill, M.S.A., briefly introduced the lecturer; and Mr. Watkins, who is a Lincoln man, then gave an interesting description of his native city.

He first described and illustrated with lantern views the supposed position and arrangement of the city in the time of the Romans, and then rapidly described its progress and alterations in Norman and later periods up to the present time.

Views of the principal historical buildings and remains of old Lincoln were shown, and a concise history of the development of the Cathedral, usually called "the Minster," was given. A number of very beautiful slides of the interior and exterior were put on the screen, and even the history of the Lincoln Imp and his photograph were included.

The interesting corporation plate was also described.

At the close Mr. Valentine Vaerwyck, a Belgian architect at present resident in Nottingham, proposed a vote of thanks to the lecturer, which Mr. C. B. Sherwin, a former Hon. Secretary of the Derby Society, seconded.

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Mr. Watkins suitably replied and seconded a vote which was proposed by the President, that the thanks of the Society be accorded the Chairman and members of the Committee of the School of Art and Mr. Harrison and the members of the School for so kindly placing the room and lantern at their disposal.

SOME EXAMPLES OF DANGEROUS STRUCTURES.*

AMONGST the causes of a dangerous structure are the following:—

(*a*) Faulty construction.
(*b*) Faulty materials.
(*c*) Faulty design.
(*d*) Decay and fatigue.
(*e*) Overloading.
(*f*) Removal of extraneous support.
(*g*) Wind pressure, shock, &c.
(*h*) Fire and explosion, bombs.

Generally speaking, several of these causes occur at the same time, particularly (*a*), (*b*) and (*c*).

We moderns are often called to account for the supposed inferior manner in which we build. People who make such remarks have only an acquaintance with the jerry-builder of the very bad type. The majority of buildings erected in London one hundred to two hundred years ago were constructed in a most inferior manner. The mortar appears to have been compounded with a fat lime, dry slaked, and, judging from the nodules of loam it contains, mixed with a good deal of the "top spit" of the field. Naturally such stuff has, and had, no binding qualities, and to this day is only so much dusty rubbish.

The bricks were badly shaped and easily broken, so much so that in taking down old walls one finds course after course of what appeared to be headers to be only "bats." This resulted in the walls being built in a series of "half brick" or 4½-inch skins, which sooner or later separated and bulged, and many a dangerous structure is due to this cause alone.

In many old buildings the main beams of the floors are placed diagonally, and the loads from the roof and four storeys are imposed upon a pier of brickwork about 14 inches square. Needless to say, such piers have crushed.

A form of construction frequently found is a shell of 4½-inch brickwork around a stout timber post. You see the brickwork bulging and wonder why a stout-looking pier, perhaps 2½ bricks square and 8 feet in height, should be failing under a comparatively light load. The explanation is that the timber post has decayed at its lower end, and the thin shell of brickwork is unable to carry the superstructure.

A very interesting case of this kind was a building near Queen Square, Holborn. Sir Francis Fox was consulted by the owners, and it was decided to grout the whole of the walls with Portland cement. Numerous small holes were cut in the interior faces just large enough to insert the nozzle of the grouting-machine. After well soaking and washing the interior of the wall with clean water under pressure from the machine, Portland cement grout was pumped in, and as it appeared at the joints and cracks it was dammed with clay stuck upon the faces of the walls by workmen watching for its appearance. The whole of the walls were treated in this way with success. Prior to the grouting they sounded hollow, but they now sound and have every appearance of being solid. After the grouting the wooden posts were cut out of the piers and substituted by brickwork in cement.

Modern brickwork is not without its faults, due principally to the lax manner in which it is supervised and to an imperfect knowledge on the part of the specification writer.

Failures have occurred by using unsuitable materials in the composition of concrete. There was the case of the reservoir where blast furnace slag was used as the aggregate for its concrete walls. The water affected the concrete so that it became quite soft and rotten, and the walls had to be rebuilt. Fletton bricks do not make reliable concrete owing to the large amount of calcium sulphate they contain. Concrete made with breeze is a dangerous material as it is likely to expand. Fire-escape balconies should not be constructed with concrete made of coke breeze. Being exposed to the weather they are peculiarly liable to be affected, and would fail perhaps just at the moment they had to be used.

Many overhanging cornices of stone or brickwork and cement have become dangerous through being insufficiently weighted or tied down. The weight of the overhanging portion and its overturning moment must be carefully estimated, and a sufficiently heavy blocking course added so as to obtain a moment of stability of at least 2. The top of the wall upon which the cornice rests should at the same time be well tied in.

Ends of beams and roof trusses solidly built into walls sooner or later decay, and cause dangerous floors and roofs. Ventilation is a *sine quâ non* wherever timber is used. A roof boarded, felted, and covered with slate or metal and ceiled will develop dry rot. Dry rot developed in the ground floor will ascend the timber of stud partitions and spread all over the first floor and attack the roof timbers via the woodwork of the first-floor partition.

If a structure has become dangerous owing to insufficient foundation or a bad foundation-bed, we must, before proceeding to apply any remedy, ascertain the nature and bearing capacity of the soil upon which we may have to place our load. Methods of ascertaining this capacity are given in Professor Ira O. Baker's "Masonry Construction" and other textbooks. If you are dealing with a clay soil, it is useless to construct your foundation at any depth less than 8 feet below the surface of the ground, for the drought of the first fine summer will affect the soil to this depth.

In dealing with structures rendered dangerous by settlement owing to the insufficient bearing capacity of the soil, the author prefers wherever there is an underlying stratum of firm material to sink down to it, even though it should be at a considerable depth. The sinking should be in the form of pits (the area of which would be determined by the loading and the bearing capacity of the firm material), filled up with good mass concrete. Then from pier to pier either construct beams of reinforced concrete or fix rolled steel joists, encased in a rich and well-graded concrete or turn arches.

Most of the balconies seen at the first floor level of the older houses in the west central district of London consist of a 3-inch slab of Portland stone, one edge let 2½ or 3 inches into the front external wall, but depending principally for support upon wooden cantilevers. In a great many instances these cantilevers have decayed, and the stone slab has sunk and cracked. The cantilevers having been painted over and over again frequently look to the unobservant eye perfectly sound, but generally a peculiar wrinkling will tell the experienced man that the wood is rotten. In one case wedding guests crowded on to such a balcony, and it collapsed, throwing them all into the basement area.

The records of the London County Council, if available, would show many cases of failure by overloading the floors in buildings of the warehouse class. Such buildings may have been of sufficient strength for the purpose for which they were originally designed, but in course of time the owners or tenants forget all about this, or they change hands, and there comes a day when it is necessary to house an extra large stock. The storeys are packed from floor to ceiling, and then the beams break or the walls bulge and crush, or, as in one case, the corbels by which the ground floor was supported were sheared off and the whole floor fell into the basement.

* Extracts from a Paper by Mr. W. G. Perkins, District Surveyor of Holborn, read before the Concrete Institute.

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Digging trenches for drains and sewers without sufficient timbering has been a fruitful source of dangerous structures.

Extreme care should be taken when trenching in bad ground, and the scantlings of the timber should err on the large side, as it is difficult to calculate the pressure to which they will be subjected. If the ground contains water, the pressure may be equal to a fluid weighing 100 lb. per cubic foot under pressure to the extent of the weight of the adjoining buildings. The struts which fix the walings, from the very manner in which they are fixed by driving in, are eccentrically loaded by the earth thrust, and a system of cross-bracing and vertical ties should be provided to the struts in all deep trenches (of course, at intervals sufficient to leave working room), so that the timbering would not fall to pieces should a movement of earth occur.

In the same category come excavations, such as for the sub-basements and basements of new buildings, which may be 40 feet deep or more, and here, again, particular attention must be given to the shoring, especially when the street is a narrow one and there are buildings on the opposite side.

The best way of dealing with such excavations is to dig a trench, timber it in the ordinary way, and brace such timbering; then build your retaining wall and afterwards excavate the "dumpling." You can do the work in sections if it is impossible to dig the trench for its full length at once.

Dangerous structures from a legal point of view are in London governed by Sections 102 to 114, 116 and 117 of the London Building Act, 1894, and Section 5 of the London Building Act, 1894, Amendment Act, 1898.

KENSINGTON: PAST AND PRESENT.

AT the last meeting of the London Society at the Royal Society of Arts a lecture on the above subject was delivered by Mr. A. Moor-Radford, who mentioned he was indebted to many of the old works on the Royal Borough for much information.

At the time of the Conquest the manor of Kensington (a parish in the hundred of Ossulston) was made over to the Bishop of Coutances by William I. Some few years later it was held under that Bishop by one Alberceus de Ver, Grand Justiciary of England, whose descendants gave twenty Earls of Oxford to our peerage. This Aubrey de Vere, after a few years, held the manor directly from the Crown as tenant-in-chief, and he alienated some 270 acres of it to Faricius, Abbot of Abingdon, as an offering for the recovery from illness of his son.

In course of time the manor area was split up: 400 acres became the manor of Notting Barns; another 470 acres, the manor of West Town; and a third, covering some 771 acres, the manor of Earl's Court. But in the seventeenth century they were acquired, one after the other, by Walter Cope, who built himself the residence presently styled Holland House.

Kensington Palace, or, as it was then called, Nottingham House, was sold by the second Earl of Nottingham for £18,000 to that great little man William III., who, owing to asthmatic trouble, thought it prudent to seek a residence in a more salubrious air than at Whitehall. Sir Christopher Wren set about improving and enlarging the palace, and in all £60,000 was spent. In the improvement William and his Queen never wearied, and after her death William seemed to take a melancholy interest in carrying on the work. Queen Anne and George I. were the next occupants. The latter reserved insignificant-looking king was not fond of appearing before his subjects, yet it was during his reign that Kensington Gardens became the fashionable promenade—first on Saturdays, and then on Sundays. With the decease of George III. kingly grandeur left Kensington as far as Courts were concerned, and no reigning sovereign has resided there since. To the present generation the Palace is most vividly connected with Queen Victoria, who was born there in 1819. In celebration of her eightieth birthday the State Apartments and the Orangery were restored and thrown open for the free enjoyment of the public.

How Kensington Church comes to be styled St. Mary Abbots is explained by the gift of part of the manor by Geoffrey de Vere to the Abbot of Abingdon. This site has been occupied by a church since the early part of the twelfth century. The present building was opened on May 14, 1872, and is the work of Sir Gilbert Scott, who gave it a spire which rises to a height of 300 feet, and is said to be not only the loftiest in London, but to be excelled in height only by the spires of Salisbury and Norwich Cathedrals.

Among the best-known houses in old Kensington must be mentioned Gore House, in its day almost as noted as Holland House. It was the abode of the celebrated Countess of Blessington and the immaculate Count D'Orsay, and was the rendezvous of all the talents. Gore House's menage gave way in 1849 under a load of debt. Four years previous the Count was so embarrassed that in a schedule of his liabilities the claims of creditors amounted to more than £107,000, a large sum in those days.

One of the most famous residences in Kensington, if not in England, was the far-famed Holland House. It stands in grounds that stretch for a distance of about a mile from the Kensington Road on the south to within a few yards of the road to Uxbridge on the north, with a breadth that is nowhere less than a quarter of a mile and in the widest part more than half a mile. It is the most beautiful and stateliest piece of Jacobean architecture within the county of London. It dates from 1607, when it was built by John Thorpe for Sir Walter Cope. The wings and arcades were added later for the husband of his daughter and heiress—afterwards Lord Holland.

It is hardly possible to imagine, said Mr. Moor-Radford, that Kensington Square, begun in the reign of James II. and finished in that of William III., was the most fashionable spot in London during the days when the Court was at Kensington. Here in 1692 was living the Duchess of Mazarin, niece of the great Cardinal, whose death left her the richest heiress and the unhappiest woman in Christendom. She died so impoverished owing to her gambling habits, that her body was detained in a mean house in Chelsea by her creditors. At Nos. 36 and 37 once dwelt Prince de Talleyrand.

Edwardes Square is closed in on the east and west by houses which are old-fashioned rather than ancient or quaint; on the north and south it is bordered by lawns. At No. 32 Leigh Hunt wrote that pre-eminent work on Kensington, "The Old Court Suburb." Some of the houses near by are believed by Mr. Moor-Radford to have been erected by an enterprising builder for the officers of Buonaparte after his invasion of England.

Museum land and the residential district known as South Kensington are the creation of the second half of the nineteenth century and the outcome of the Great Exhibition of 1851. From that Exhibition there was a surplus of £200,000, which the Prince Consort was bent on applying to educational work for the benefit of the public in general. But to the Prince and the far-seeing men who had acted as his advisers in organising the Exhibition it was obvious that this purpose could be most effectively served indirectly by investing the money in undeveloped land and in the locality where the Exhibition had been held. The surplus was augmented by a grant of £150,000 from Parliament, and with the funds thus available the Royal Commissioners bought two estates and a part of a third. The two which were acquired in their entirety were the Gore House estate, consisting of 21 acres and extending from the Kensington Road about quarter of the way down the Exhibition Road, and the Villiers estate of 48 acres, comprising the land upon which has been built the greater

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part of Queen's Gate as well as Cromwell Road. The third, the Harrington or Hall House estate, of which 17 acres were purchased, included the site of the Victoria and Albert Museum. The original proposal of the Prince was that the National Gallery, the Royal Academy, and similar institutions should be transplanted to the region now called South Kensington, and to that should be added a great Museum of Art and another of Science. As all the world knows, the scheme has not been carried out in its integrity. Yet even now it is a great art and educational centre. Only quite recently the Royal Geographical Society has moved to Lowther Lodge, whilst King's College for Women in connection with the London University has located itself on a magnificent site at Campden Hill, and also Queen Mary's Hostel therewith. May not this, asked Mr. Moor-Radford, be the forerunner of many other learned societies locating themselves in Kensington? For where indeed could a better site be found than in a portion of the grounds attached to Holland House for a magnificent series of colleges worthy of London itself?

THE ART-INTELLECT IN EGYPT.

By ROBERT WILLIAMS, F.R.I.B.A.

THE year's work of the students of the Cairo School of Arts and Crafts has just been exhibited, and but scant notice has been taken of the exhibition by the not inconsiderable Press of Egypt, both Arabic and European.

It would probably come as a surprise to some of the organs of the Press if they happened to discover, accidentally, that there was in their midst a school in which some fifty students were being helped, by an able art-master and his assistants, to develop such artistical powers as, haply, they may have been born with.

Schools of arts and crafts are now parts of most educational systems. By a rebound art-work, hand-work, craft-work, and what work you will, that must be done by hand, guided by an eye influenced by the art-intellect have jumped into the arena of the educational systems, requiring recognition.

There have always been art and craft schools. Perhaps the school of Tubal Cain and the workshop of the master carpenter buried many thousands of years ago near the pyramids of Gizah, were among the earliest of craft-schools The modern cult of freemasonry originated in the schools of mason-craft. The painters and sculptors of the middle and later ages had their individual schools.

In the olden days the workshops of the artists and master craftsmen were also schools, and schools of a high and noble order they often were. Into these schools such as were born with the art-intellect were carried by their life's current, though the current was not always smooth and straight. The future artist, more often than not, had to be discovered and rescued out of uncongenial circumstances. Thus was Giotto the little goatherd found by his future master Cimabue, who forthwith took him into his school. Through which fortunate circumstance posterity was given the beautiful tower at Florence and many another noble work, which to this day the world enjoys.

But there came a severance between the workshop practice and the ordinary schools which had become academic, or given over to theory. Design no longer originated in the school workshop, so the artists and the craftsmen relapsed into automata, like the machines which now began to compete with them.

All down the ages, however, from the days of Tubal and those of Bezaleel, who was filled with the "spirit of God" as a "cunning" worker in gold and as a woodcarver, there ran through the ordered, though at times beclouded, mind of humanity the promptings of a sense of beauty; like a golden thread it ran through the lives of men and women, and though often covered over by the self-gathered cares of life, it persisted in shining out, in being discovered, and this happened despite the apathy of the academies who would neither come to the workshops nor let the workshops come to them.

At length, through the teaching of Ruskin and men of like mind, it was found and acknowledged that "a certain quantity of art-intellect is born annually in every nation."* Technical and art schools sprang up. "Let us find the art-intellect and develop it," said the artists and craftsmen. In other words the mass of artistic temperament, for the most part lying dormant, began to awake demanding its place in the school system.

Accordingly, the old workshop-schools having gone their way, ousted by machinery and apathy, there has arisen, instead thereof, schools of arts and crafts, which, as they develop in power, in sincerity, and in craftsmanship will bring in a new race of artists and craftsmen, having for motto: LET US MAKE THINGS AS NOBLE AND AS BEAUTIFUL AS OUR HANDS CAN MAKE THEM. And it is some such motto as this, let us hope, may become the working rule of the Cairo School of Arts and Crafts. Here, in passing, I would like to express a hope, and it is that this motto, which can be easily turned into Arabic, be carved by one of the students in the beautiful Kufic character, such as was used at the mosque of Ibn Touloun over a thousand years ago.

In taking a general view of the year's work of the students, and in looking at their work, done to time, during the week of their diploma examination, it becomes quite clear that Egypt has its quota of art-intellect born within its borders. But it is a moot point as to whether the Egyptian scholastic system possesses the means of discovering the whole, or even a fair part, of the possessors of the artistic temperament that must be scattered thoughout the land of Egypt: and it must be obvious to all who give the matter but the slightest thought, that until every Egyptian child receives an education which shall test its mental powers, no complete search for, or discovery can be made, of Egypt's art-intellect. It may be found among the fellahin youths and maidens, or among the sons of carpenters, blacksmiths, or masons, or among the daughters of the poorest embroiderers or washerwomen. The art-intellect does not lodge itself in the minds of any particular class. It is born where it lists. To it there is neither rich nor poor; neither pasha nor peasant. It is born we know not how.

At present the students for the arts and crafts are selected in a somewhat haphazard fashion from the primary schools, but are not thereat trained up to a point which enables them to pass an elementary examination in simple subjects pertaining to art. It is, therefore, a matter of chance that the school hits occasionally on the right kind of students.

But men of genius are always required, and Egypt must set about sifting them out from among the population, by discovering and adopting the best means of education generally for all her sons and daughters.

The salient crafts of the school seemed to me to be weaving, ironwork, and wood-carving; of which weaving, from its importance and the excellent designs and woven specimens of fabric made by the students, should, I think, be placed first; the next in order was ironwork, exemplified in balusters, lamp-stands, candlesticks, grills, and knockers; wood-carving and modelling in clay comes third. The work done in these subjects shows great promise, not only in design and new departures, but in the artistic touch that one often felt had guided the hand of the student.

Decoration is studied by a good many students who show some inherent capacity for the highly-coloured decoration characteristic of their native land. Some good work was done, but their wall and ceiling decoration often lacked the quiet repose that, at any rate, one would like to see in an English house. And though the climate of Egypt withstands strong colours one would like to counsel the students to try quieter tones, and to model some of their ceiling decoration in the solid.

Furniture, in the form of ornamental tables, chairs,

* "Political Economy of Art," by John Ruskin.

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tea-caddies, medal-cases, and carved picture frames, was exhibited, and all showed power in the handling of tools and a promise of future excellence.

All this interesting work, at the exhibition and in the school, is the result of careful tuition in drawing and design, both directly by, and under the guidance of, the headmaster, Mr. W. Stewart, to whom much credit is due for having done so much to enhance the study of the arts and crafts in Egypt during his brief sojourn here of four years. From what I have seen during my visits to the exhibition and the school I think we can confidently look forward to greater things.

The school has in front of it a great future, if it resolutely sets itself to the initiation of new crafts and to the revival of old ones, for there is scarcely a craft that is now in vogue in Europe that has not at sometime or other been exercised in Egypt, in, of course, what we may term some primitive form. An examination of extant works and a visit to the Cairo Museum or to the museums of any of the great cities of Europe and America should make this clear.

Now weaving is a very ancient Egyptian craft, but it is open to improvement, and the arts and crafts school is already improving it. At Mehalla Kebir, a Yorkshire weaver is instilling the students with new and more artistic methods.

Among other matters the weaving of damask fabrics, an old Egyptian industry fallen into abeyance, has been begun anew, and by and by we may see every dinner table in Egypt covered with a beautiful home-woven damask cloth. Let not European manufacturers try to stifle these aspirations in the fear of losing trade. The more Egypt does for herself the more she will trade with Europe, for, of course, there will be more manufactures to trade with.

Egypt is the home of the hand-loom. From England, alas! with the village flour-mill it has gone.* But here in Egypt nearly every village has its loom, and no artistic improvements should allow it to be ousted in favour of huge engine-driven weaving factories. Better everything remain as it is than that consummation. Improve the looms certainly, but let the industry remain in the villages.

Glass was made in ancient Egypt. The modern Egyptian loves coloured glass, and he should encourage the school to work in glass, not in gaudy, primary colours, but in the lovely quiet shades and hues which their own skies show them at the close of sunset, but the student must be quick to catch the tints, as they do not linger, or should be up betimes to capture the delicate tints of "rose-fingered dawn" as it begins to show over Gebel Ahmar.

In this land of the potter, faience could well be made, for there is clay enough to hand. And what beautiful works may not the craftsmen and the sculptors make in alabaster, granite (both red and grey), and porphyry and many other rare materials of which there are plenty in Egypt.

Let the students study the collection of minerals in the Cairo Geological Museum. Let them look at the marvellously sculptured fossils, whose beauty and fineness of detail is such as to preclude the possibility of imitation by the most consummate art of man. Let them ask: Are these wonderful sculptures of Nature a clue to the origin of art? Were they designed by some arch-intellect?

The school must prosper; the Egyptian public must begin to delight in artistic work which can be produced in their own country, must give free play to the artistic feeling that from time immemorial has tempered the soul of the dwellers in the lands watered by the great Nile. But art is elusive. The moment one makes some abstract statement about it there follows a desire to hark back to prove it. Now, as to the souls dwelling on the banks of the Nile, were they all inspired? I believe that every soul has an equipment which fits it to enjoy the beauties of creation, but there are diversities of gifts, and there is a special gift which provides for the outward expression of art. Men and women are born with this gift in varying degrees, according to the work they have to do.

The sense of beauty, Ruskin tells us, he considers to be "a mixture of senses of the body and the soul," and, as all volitive power comes from the soul, the part belonging to the body can only be executive. It is in the soul of the people, therefore, we look for the roots of art.

If only we could examine our souls, our principles, and if our consciences were always the voice of God, how great would be the happiness of the world! To some this may sound dithyrambic, and far removed from the ideas engendered by a consideration of the arts and crafts. Yet it is not so, because the pursuit of art in its highest and noblest ideal, whether it be in the weaving of a piece of arras, in carving the newel of a staircase, or in the painting of a fresco on the walls of a church, or in the building of a minaret or a spire, is above all material, monetary, or worldly considerations of any kind, and this is true of all noble service whatsoever, whether in peace or war. It is from the soul. From a soul on earth truly, but not of the earth, earthy.

Do not translate this to mean that a man should not get his bodily sustenance from his work. His livelihood has been decreed of old.

Now then, students, professors, teachers, and people, what are we here, on this planet, for? A great question, but it is well to ask it of ourselves occasionally, nor should the answer be "To eat, drink, for to-morrow we die"; nor should it be "To make beautiful things, to rear lovely edifices, to have them battered to powder and scattered to the four winds of heaven." What then? Is it the aim of the student to arrive at a diploma and, having gained it, to sit down to some soft post in the Government service, and thenceforth to take his daily siesta, smoke his cigarettes, and enjoy the other sensualities of his life, until, having amassed a quantity of adipose tissue, he retires worthily on a pension, and then, becoming weary of eating and drinking, he resigns his overcharged body to be borne of four to return to the earth whence it came? Is this the aim? Heavens! A nation of well-fed, wiry, muscular, straight-limbed, slave-artists, at so many onions a day, as Ruskin would say, working in batches of thirty thousand, at temples, hieroglyphs, pylons, and pyramids, would be nobler and far happier than a million million of those whose end is purple and fine linen—and a pension.

No, the aim of the student must be high. High-minded he must be. His teacher must imbue him with this ideal. True, the manufacturer will come along, exploit him and "make money" out of his genius, nevertheless, let it be so. Art will outlive the money making manufacturer and will come to its own, or rather the manufacturer will find he cannot do without art and cannot exploit it.

The ugly things are already beginning to go, and this is due to the perseverance of the artist, and to the fact that the art-intellect is born among the people, manifesting itself as occasion gives it opportunity, with more or less of power. And but for this the manufacturer would have gone on making the ugly things; it was easier for him, as he was hemmed in by the tyranny of profit.

Let us remember, however, art has not yet come to its own and will not until it can control the machines of the manufacturer. That the mighty works of the ancient Egyptians were done with but little machinery is not a criterion for these days. Machinery is with us and great is its work, but we have to see to it that art becomes the master and not the servant of machinery. That, as already hinted at, is still the task in things pertaining to art. The machine and the craftsman must work together. Art being captain, that is, the machine will do

* To be some day restored, at any rate to a considerable extent, I hope.

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the rough hewing of the block, but the chisel in the hand of the artist will, so to speak, give it life.

And finally as to the art-intellect. How came it? And what is art? Even the savage is tamed by art; when cutting beautiful and appropriate ornament on his club, or on the head of his canoe, or on the blade of his paddle, he is no longer a savage. His soul, for the time being loses its savagery, a delight is awakened within him as he sees the scrolls and lines taking form under his own manual skill. And this may well make us ask, was the work of the savage due to the art-intellect with which he was born? And may the work have been due also to unconscious intellectuality? These questions may be unanswerable. We can brood over them, remembering the while that the lines wrought on the implements of the savage, evidently for the pleasure which their cutting gave, whether wrought intellectually or non-intellectually, whether art consciously or otherwise are at the beginning of ornament. As to the precise period of its evolution at which it became "art" the records are, I think, silent.

In his commendable little book on Egyptian ornament Professor Petrie shows us that this ornament, in its early stages, is the foundation of all ordered ornament, and in this the Egyptian student has a great heritage. Albeit, the author* of another interesting book tells us very bluntly "that Egyptian art contained in truth nothing intellectual"; and this is said of the art of artists who depicted in colour and graved in stone pictures of kings and people; artists, priests, and workmen in their multifarious occupations who drew animals, birds, and fishes, and almost every movement of man and woman in peace or in war; and who thousands of years ago taught how to draw correctly a horse at the gallop.

These artists who did this work so surely and lastingly that much of it is to-day as fine in line and in tone as it was when chiselled and painted many thousands of years ago—these, surely, were intellectual men.

But our author comes lower down, making us still more concerned. He comes to what we may call modern times when compared with those of the early Egyptians. In his chapter on the "Arab in Architecture" he is very severe on the Arab builders and architects, and writes of the "bulging surfaces and crumbling brickwork" of their structures, forgetting the set-off in the massive stonework, fine pointed arches, and grand cornice of the mosque of Sultan Hassan, and the brickwork wrought eleven centuries ago in the mosque of Ibn Touloun.

The theme of this book, which deals in no felicitous vein with the art of ancient and mediæval Egypt, is a "consideration of art as an expression of human life and character." This is the true note for all art students. Their lives and characters are in the making, and they themselves can make or mar the beauty of the "expression" which they leave behind them.

I must continue my slight criticism of a part of this book, because it deals somewhat drastically with the noble legacy of art left on the banks of the Nile, not only to Egyptians but to the world. Our author somewhat uncompromisingly condemns the want of variety in the art of the ancient Egyptians, and ascribes their "unthinking iteration" to the "tyranny of the Nile." The yearly fertilisation of the land by the Nile had, he seems to think, kept the ancient Egyptian art in an "archaic rut." Why the regularity of ploughing, sowing, watering, reaping, threshing, grinding, and making into bread should so affect both the art and our author it is difficult to understand. Without this regularity in the production of bread in the world where would, not Egypt only, but humanity be?

The genius of the Nile fulfils for Egypt its part of the old-time promise, "While the earth remaineth, seedtime and harvest, and cold and heat, and summer and winter, and day and night shall not cease." And it is as if the river had said to her sons, "Work away at your arts and crafts, develop the beautiful hieroglyphs, make 'sermons in stones' which shall be read by other dwellers on my banks and by travellers to my shores from distant lands, many thousands of years hence; do this and I will see that you have bread enough and to spare." This is not "tyranny," but the lovingkindness of a mother.

But in his characterisation of Arab architecture he, our author, inversely complains of too much variety, of its "eager inventiveness, its capricious changes, the complications and inflections of its designs," and all this he sums up in an aphorism, "Arab architecture is the best presentment of Arab character that remains to us." That is, of course, the Arab of history, whose "whimsical civilisation" which "broke into so wild a frenzy of necromantic and astrological speculations," he says, is paralleled with curious felicity in the odd and freakish shapes, the flame-like mounting spirals, and fantastically curved and twisted arches, into which the new architecture [of the Arabs] instantly developed." This statement seems to me to discount the value of an otherwise interesting book (by an author who has written so much on architecture with which one cordially agrees), for not one of the architectural aberrations catalogued above can apply to the mosques of Sultan Hassan, Kait Bey, Ibn Touloun, and the mosque of Amr, the last-named being the first mosque built by the Arabs in Cairo. True, these animadversions on Arab architecture are illustrated by a photograph of an unfortunate piece of work at Cordova, which is no more fair than to illustrate the Italian Renaissance by some of the plates of the travesties of the Renaissance given in Rossi's folio of 1701.

Nearly three hundred years before a Gothic arch was turned in Britain the Arabs or their builders had built, at the mosque of Ibn Touloun, their fine series of arcades, of well-proportioned pointed arches, supported by strong rectangular piers, with three-quarter shafts in their re-entering angles. All built of brick, made near by, and there they stand to this day; and, curiously, the "bond" of the brickwork is English, for this, mark you, is the strongest form of bond. Evidently there is no "crumbling brickwork" here. The piers and arches were built to last.

But where did the Arabs get their strong brickwork bond from? No English bricklayer had come along. They got it from Karnak, where, thousands of years before, it had been used as the bond for the great boundary wall, on the top of which you could drive three horses abreast. This kind of bond, which we call "English," but which, with more propriety, might be called "old Egyptian," continued to be used until the introduction of the weaker "Flemish" bond probably through France; but now "English bond" is regaining its place, to the no small improvement of present-day Egyptian brickwork.

Enough, so far, in deprecation of the sweeping charges against Arab construction. Imperfect some of it is, but we must be fair and take account of the good as well as the weak. Nevertheless, I would counsel the reading of "The Works of Man" Let not the Egyptian student be afraid. If he find some old characteristics somewhat brutally portrayed in that book, let him remember this, which I copy from the same book: "At the time of the Renaissance, Arab knowledge and scholarship, Arab art and poetry, had illumined and beautified the world for some seven centuries."

Let there be a renaissance of the spirit of Arab art, not in the old form, copy nothing, study everything. Let the Arab art-intellect fructify and let intellectuality have full play. Let this be done, and you can be fully persuaded that new and fruitful ground is being broken, into which good seed is being thrown, to come again, a bountiful crop.

And why have I this hope? Because I have noted how an Egyptian costermonger's barrow is decorated with good ornament; because I have seen how bravely a peasant colourist strives to tell the passer-by a tale in

* Mr. March Phillips—"The Works of Man."

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colour on the wall of his cottage; because the Egyptian potter still makes shapely goulahs (water jars); because the women still do fine needlework and have lovely schemes of decoration in gold discs, beads and bracelets for their persons.

Yet more, because for fourteen years I have had my designs realised, mainly, by Arab workmen, and some of those men, and those only, have asked me to teach them any (to them) new way of doing things. Let me give an instance. A few years ago I had occasion to pull down some badly bonded brickwork. Both Arab and European bricklayers were equally at fault. Eventually the work was rightly done in good English bond. At the conclusion of the episode I was delighted by a request from a group of Arab bricklayers for lessons—"ihna awiz dars menak enta"—"we want a lesson from you." The result was a little work with diagrams of brickwork, and an illustration, as a warning, of the original faulty work.

But not only did the bricklayers come for a "dars" (lesson), but the carpenters called at my office for the same purpose. So, by these and many other infallible signs, have I become aware of a renaissance in Egypt. Let me say, therefore, in conclusion: "Forward, Egyptian students, master the arts and crafts!"

HOLY TRINITY CHURCH, COVENTRY.

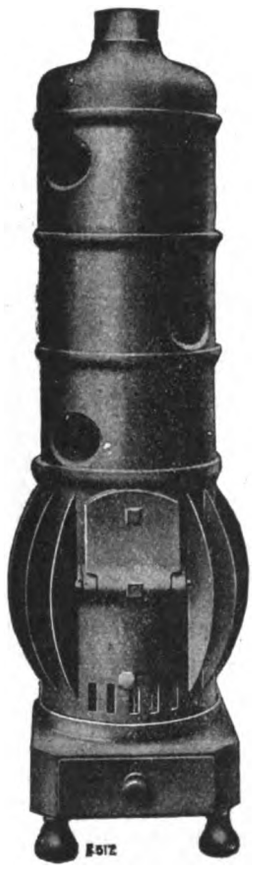
In his report on the restoration of the tower of this church Sir Thomas G. Jackson, R.A., writes: The history of the tower is a history of disaster. The spire was blown down in 1665 and rebuilt within the next two years. Further repairs are reported no less than nine times between 1674 and 1854, the later repairs being described as thorough. The tower is over the central crossing, and is well abutted on all four sides by the transepts and main arcades. I did not detect any failure in the arches, and the piers seem nearly upright. I concluded the foundation is good and probably is laid on the solid sandstone rock which is near the surface. I noticed some signs of crushing in the south-west pier under the respond of the nave arch. The other piers have had new stones let in, as if there had been some mischief there, but on the whole I did not see much amiss in the lower part of the structure. In the south transept there is a serious crack in the west wall and a corresponding one opposite in the east wall. These do not come down to the ground, and are worst at the top, that in the west wall being nearly 2 inches wide in the upper part. I had the walls plumbed and found the side wall upright, but the south gable wall had an inclination outwards of 2½ inches in a height of 30 feet. I concluded from this that the rupture was not caused by any pressure of the tower, but to some defect in the foundation of the south gable wall. I next examined both inside and out the upper part of the structure above the roofs. The tower is of very slight construction indeed. The walls appear nowhere to be more than from 3 feet 4 inches to 3 feet 6 inches thick, and are so much cut up by windows that except at the angle they are very weak. They were built of a perishable red sandstone, and somewhere about 1830 the whole seems to have been refaced with new stone. This facing is only 3 inches, and in places 2 inches, in thickness. Each mullion consists of two halves with an upright joint in the line of the glass. The two thicknesses are cramped together with iron, which is rusty and by expansion endangers the stone.

The whole of the tower below the parapet is in a terrible state of decay, though the refacing is not a century old. Many of the features of the design are nearly obliterated. Some parts are better than others, and in places the decayed masonry has been mended with new, but the whole surface, though not ancient, but comparatively modern, is in a state of absolute ruin. I have been told that six tons' weight of loose surface had lately been removed to prevent it falling on the roof. I observed a large piece cracked away in the north-west corner, facing west, which a touch would bring down and which will be secured temporarily to prevent it falling, and probably bringing other material with it. It will be understood from what I have said that the masonry is far past remedy by injecting any preservative solution. There is, I fear, no alternative to refacing the whole tower again, as was done before, but doing it in a better manner and in a better material. The belfry stage, in particular, consists largely of mullions, and was still more frail before the little side slits of the windows were walled up. In renewing this part some of the inner half mullions may be retained, but in each pier there should be several through stones, and in the belfry windows they should be large enough to bond across the closed slits. I need hardly say no iron should be introduced, and where cramps are needed they should be of gun-metal. But proper bonding will supersede cramps in most cases. Elsewhere the new facing should be well bonded to the backing, and not merely applied as a veneer, which has seriously weakened the structure. At three levels the tower is bonded with iron rods on the outside face. These have no doubt been of service, but they are decayed by exposure, and it will be well to substitute fresh tierods across the tower inside instead of outside, with good cramps outside and screws to tighten them, after which the old rods could be removed. Being exposed inside the church the new ties could be kept well painted to prevent rust. To reface so slight a structure will require the greatest care, or there may be an accident.

The work was, on my recommendation, entrusted to Messrs. Thompson, of Peterborough, who have had a greater experience than perhaps any other firm in dealing with ancient churches and such delicate and hazardous operations as the present, and a contract was made with them in August last year. Since then the south transept gable wall has been solidly underpinned on the hard rock, the cracks in the wall are being bonded across with long York stones, and grouted with cement by means of the Greathead machine, which forces cement into every crack and cranny of the masonry. The refacing of the tower has been proceeded with, and the angle buttresses and the stair turret are being reconstructed with solid masonry. The north transept is cracked as badly as the other, but as the flue of the heating apparatus passes up in the thickness of the wall the repair of that part must wait till the heating is discontinued in the summer. The new stone is red sandstone from Woolton, near Liverpool, which is much harder than any other variety of that material, and may, I think, be trusted to stand well. The question has been raised whether, when the tower has been thoroughly repaired, it would be safe to restore the bells to the old belfry. This, however, in my opinion, would not be desirable. We shall, I hope, leave the tower far stronger than we found it, but it is obvious that after a double process of being skinned and refaced the structure cannot be equal to its original condition. I recommend that the bells be retained in a separate tower as at present. The existing structure, which is only of deal on a brick foundation, is badly decayed, and cannot last much longer. The best plan would be to rebuild it in brick or stone for some 25 or 30 feet in height, and to re-hang the bells in a new cage on this structure, enclosing them in a framework of oak, covered with oak shingles. Thus treated in a simple manner, the new bell-tower might be made comely and attractive, and would have the great advantage of enabling you to ring the bells, which, in the present structure, can only be chimed with safety. At a rough calculation I imagine the cost of such a structure would not exceed from £1,300 to £1,400.

Mr. Robert Williams, F.R.I.B.A., from whose pen another article appears in "The Architect" this week, again wishes us to impress upon any members of the architectural profession who may be serving with the Forces in Egypt that he may be communicated with at St. David's Buildings, Charch Emad-el-Din, Cairo.

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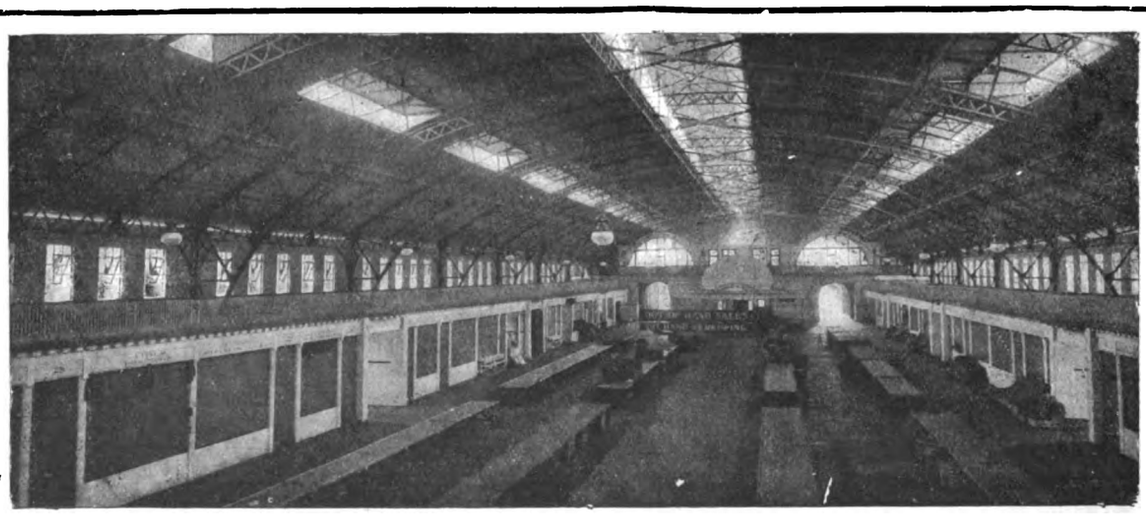
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THE LONDON ASSOCIATION OF MASTER DECORATORS.

AN executive meeting of this Association was held at the Holborn Restaurant on March 15, Mr. W. Stewart-Greene in the chair.

A special committee was appointed to arrange meetings in the suburbs of London with a view of forming affiliated local Associations. The committee consists of Mr. A. S. Jennings, Chairman, C. E. Wilkinson, F. Dakin, A. Andrews, J. Anderson, W. Stewart-Greene, and S. Rowden, with power to add to their number.

The following letter of the President to the trade was then read and agreed to be distributed.

Dear Sir,—The London Association of Master Decorators having done me the honour of electing me President for the year 1915-1916, I feel one of the most important of my duties is to endeavour to increase the membership of the Association.

My first introduction to the Association was during the painters' strike of 1913, when I recognised that it was of the greatest importance to the master decorators of London to have an organisation to fall back upon as a medium between themselves and the employees. I therefore decided to join the Association and was instrumental in introducing a few of the leading West-End firms of decorators as new members.

I do not wish to suggest for a moment that the Association had not done excellent work before the strike, but I do not hesitate to say that the strike was the turning point in its career; and, although the strike was a great inconvenience to us, I have no doubt it would have been much worse and of greater duration had we not had the Association through which to embody our views and negotiate terms of peace with the men.

Although I have said I feel it to be my duty to the Association to try and increase the membership, I also feel that by so doing I am performing a duty to the decorating trade of London. It may be felt by some that the present crisis in the history of our country is scarcely the time to commence propaganda work and recommend people to put their hands in their pockets for association subscription, however moderate it is; but I am doing so with a clear conscience, as I firmly believe that when the war is over we shall find ourselves in the midst of labour troubles the like of which, fortunately for us, have not yet been seen in this country. It therefore behoves us to be ready, not to fight labour, but, as an influential organisation, to go hand in hand with labour endeavouring to solve the problems which will arise when men happily lay down their arms and resume civilian life, or when the munitions factories close and workpeople will have to readjust their lives and accustom themselves to normal rates of pay.

I have dwelt on the question of labour because I feel it to be of the most importance; but there are many other details which the Association deals with during the year that may not be heard of outside the Council, but which are all in the interests of the trade.—Yours faithfully,

M. COWTAN COWTAN.

At the quarterly meeting following, Mr. Mawer Cowtan Cowtan took the chair and read an interesting paper which was prepared and read by his father at a meeting of the Decorative Art Society on October 9, 1844. Mr. Hindley also read a paper by Mr. E. C. Laugher, of Kensington, on "Chintzes" which was originally read before the same Society on November 27, 1844, when a useful discussion followed.

On the 9th inst. an official visit by the members of the Association was made to the L.C.C. School of Building, Ferndale Road, Brixton, S.W., and to which we made reference in our last week's issue.

Mr. H. W. Richards, Principal, and his assistant, Mr. A. R. Sage, conducted the party over various departments, including those devoted to decoration. In the decorators' design studio Mr. H. Davis Richter, the visiting teacher of design, explained the instruction given to the students and the various styles of ornament and their training in draughtsmanship, modelling and colour harmony. The visitors afterwards proceeded to the painters' shop and inspected the excellent samples of graining, lettering, and decoration in progress, including models, a portion of a complete room which gives an excellent idea of the colour effect produced. Mr. A. R. H. Jackson, A.R.C.A., and Mr. W. G. Sheppard, B.A., gave a somewhat lengthy but most interesting explanation of the method of teaching colour harmony and colour contrasts. The bricklayers', carpenters', masons', joiners', and other shops were afterwards visited, and also the mechanical laboratory, where some tests of wood and cement were made which showed that a 4-inch cube of yellow deal yielded to a strain of 35 tons, while a briquette of cement gave way under a pull of 730 lbs. per square inch. It was explained by the Principal that the first batch of trained boys would be sent out from the painters' shop in about a month's time, and that these youths would obtain first class situations under agreement for two or three years from members of the London Association of Master Decorators.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Housing after the War.

SIR,—Referring to your report of the meeting of the Sanitary Inspectors' Association in Bristol, I am pleased to note that, in his presidential address, Mr. George Gibson recommended the abolition of many municipal by-laws now affecting buildings exactly on the lines advocated by my letter to you on January 1 last; but I do not think he is wise in his suggestion that streets should be less than 36 feet wide, unless the space between the houses is kept at that minimum; in which case, if there is a back street, the front approach might be by a footpath, retaining the remainder as garden, as 15 feet or 16 feet of garden in front of a cottage contains the elements of greater happiness and health than 15 feet or 16 feet extra of street width, while the cost is infinitely less. I think Mr. Gibson's suggestion of allowing any asbestos building material to be used, "although it may fall down in sixty years, even if continuously papered," is a particularly good one, as if cottages do not fall down in sixty years they should be pulled down and the streets destroyed, because in sixty years the locality has altered, and, too, hygienic reasons demand it.

The other suggestion in the admirable speech, however, "that corporations should build and pauperise their scheme by subsidies from the rates," is distinctly bad ethics and a wrong principle, and should be vigorously protested against in its most incipient stage.

The death-rate of Leeds is low, the health of the city exceptionally good, yet Leeds is the very hotbed of the old back-to-back houses; and I still hope and believe that the law prohibiting building back-to-back houses, if built in blocks of four, will be repealed, as they provide the cheapest and healthiest dwelling for the artisan to be found anywhere.—Yours, &c.,

W. H. WOOD.

Queen Square House, Leeds:
March 21, 1916.

THE Huddersfield Town Council have agreed to extensions of the Technical College in connection with the teaching of dyeing chemistry.

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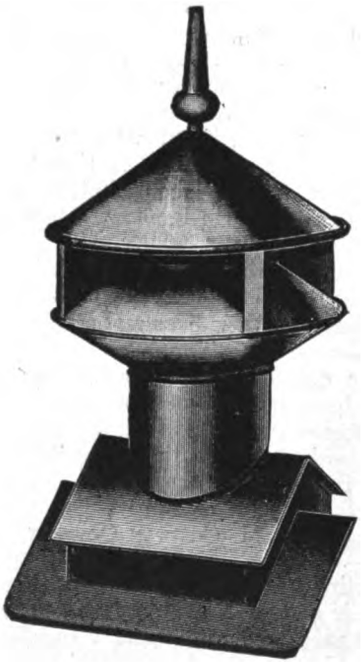
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A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BUCKINGHAMSHIRE.

Aylesbury—Petroleum Store, off Park Street, for the Bowring Petroleum Company, Ltd.
Premises, for Mr. J. Putman.

CORNWALL.

Summercourt.—Picture palace, &c., for Mr. Phillips.

DURHAM.

Jarrow-on-Tyne.—Two houses, Wellesley Street. Mr. A. Glen, builder, 11 Queen's Road.

ESSEX.

Orsett.—Margarine factory, West Thurrock. Messrs. E. N. Clifton & Son, F.R.I.B.A., architects, 7 East India Avenue, London.

HAMPSHIRE.

Farnborough.—Cinema theatre, Farnborough Road, for Mr. A. Chaplin.

KENT.

Ewell.—Premises: rebuilding after fire. Messrs. Worsfold & Hayward, architects, Market Square, Dover.

Gillingham.—Bungalow, Hempstead. Mr. F. D. Pott, architect.

Rochester.—Workmen's dwellings, Steele Street, Strood.

LANCASHIRE.

Manchester.—Co-operative Stores: addition. Mr. H. N. Walsingham, architect.
Co-operative Stores, Openshaw. Mr. J. B. Thornley, architect.
Works, Cambridge Street: additions. Mr. W. A. Dew, architect.

Patricroft.—Proposed church, Hardy Street (as chapel-of-ease to St. Michael's Church, Winton).

St. Helen's.—Picturedrome, Bridge Street: alterations.

LINCOLNSHIRE.

Boston.—Factory, Norfolk Street: extension, for Messrs. Fisher, Clark & Co.

Lincoln.—Offices and workshops, Sincil Bank and the Spa, for Messrs. Clayton & Shuttleworth, Ltd.
Offices and workshops, Coulsham Street, for Clark's Crank and Forge Company, Ltd.
Shop, Firth Road, for Messrs. Foster & Co.
Workshops, Newland Street West, for Messrs. Singleton, Flint & Co.

MONMOUTHSHIRE.

Pencoed.—Castle: restoration, for Sir H. Mackworth.

NOTTINGHAMSHIRE.

East Kirkby.—House, Clumber Street, for Mr. N. Renshaw.

Kirkby-in-Ashfield.—House, Sutton Road, for Mr. D. Lowe.
Two houses, George Street, for Messrs. Butler & Barker.

Nuncar Gate.—House, Chapel Street, for Mr. H. Garner.

SOMERSET.

Bridgwater.—Proposed isolation hospital.

Midsomer Norton.—Engine House: addition, for the Midsomer Norton Boot Company.
Warehouse, for the North Somerset Agricultural Co-operative Association, Ltd.

STAFFORDSHIRE.

Shelfield.—House, Spring Road, for Miss Whitehouse.

WILTSHIRE.

Salisbury.—Milford Street U.M. Church: additions to Sunday schools. Mr. F. Bath, F.R.I.B.A., architect, Crown Chambers, Bridge Street.

WORCESTERSHIRE.

Kidderminster.—"The Larches" Red Cross Hospital: addition.

Malvern.—Hospital for wounded soldiers, Ashfield.

YORKSHIRE.

Darton.—Eight houses, Mexbro' Lane, for the Darton Main Colliery.

Edlington.—Cinema house (1,000 seats), King's Crescent and Edlington Lane. Mr. D. Milne, A.R.I.B.A., architect, Priory Place, Doncaster.

Doncaster (near).—Proposed W.M. Church and School, Balby.

Keighley.—Morton Banks Hospital: additions (£5,000 to £6,000).

Mirfield.—Ledgard Bridge Mills: extensions. Mr. J. W. Burrows, architect, 94 Huddersfield Road, Birstall.

Morley.—Deanfield Mills: re-erection after fire. Mr. T. A. Buttery, architect, Exchange Buildings, Queen Street (also at Leeds).

SCOTLAND.

Glasgow.—Netherton Works, Anniesland: store, &c., for the Ioco Proofing Company, Ltd.
Works, Commerce Street: additions, for Messrs. Campbell, Achnach & Co., Ltd.

Johnstone.—Premises, High Street, for Messrs. J. Houston & Son.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 2,250. Feb. 12, 1915.—E. A. Welch, 49 Francis Road, Strechford, Warwick. Convertible electric fire.

2,312. Feb. 12, 1915.—A. F. Berry, 27 Woodville Road, Ealing. Electric heating apparatus.

2,353. Feb. 15, 1915.—John Spencer, Ltd., Globe Tube and Engineering Works, Wednesbury, Staffs. Valves and fittings for automatic sprinkler and alarm systems.

2,400. Feb. 15, 1915.—Francesco Pucillo, 46 Grosvenor Road, S.W. Structures or frames for building or the like.

2,532. Feb. 17, 1915.—C. G. Major, and Smith, Major & Stevens, Ltd., Abbey Works, Weedon Road, Northampton. Controllers for electric lifts.

2,553. Feb. 17, 1915.—Professor George Ebrill, Royal Veterinary College, Pembroke Road, Dublin. Siphons.

4,183. March 17, 1915.—John Hall, 102 Bernard Street, Woodville, Derby. Device or apparatus for moulding or forming the bodies of earthenware gullies and the like.

4,365. March 19, 1915.—R. F. Carey, 6 The Broadway, Leigh-on-Sea, Essex; L. W. Sims, 16 Eddystone Road, Crofton Park, S.E.; and Waygood-Otis, Ltd., Falmouth Road, Great Dover Street, S.E. Air main connections for vacuum cleaning.

4,371. March 19, 1915.—R. F. Carey, 6 The Broadway, Leigh-on-Sea, Essex, and Waygood-Otis, Ltd., Falmouth Road, Great Dover Street, S.E. Suction nozzles for vacuum cleaners.

4,396. March 20, 1915.—O. H. Stone, Highclerc, Hollyfield Road, Sutton Coldfield, near Birmingham. Production of patterned or ornamented paper.

4,708. March 26, 1915.—Frederick Thackeray, 3 Cambrian Terrace, Gwaelodygarth Road, Merthyr Tydfil. Linings for concrete walls, floors, and roofs.

5,752. April 16, 1915. (Dated under International Convention, April 25, 1914.)—C. J. A. Nielsen, 11 Hestedamsgade, Horsens, Denmark. Machine for making concrete slabs or tiles, and especially roofing tiles.

8,666. June 11, 1915.—James Menzies, 25 Victoria Street, Westminster, and H. W. Dennis, 68 Moray Road, Finsbury Park, and H. M. Moll, 8 Bennett Street, St. James's, S.W. Apparatus for the destructive distillation of sewage.

9,989. July 9, 1915.—G. W. Naylor & J. F. Naylor, Denby Dale, near Huddersfield. Purification of sewage.

10,323. July 15, 1915.—C. E. Dick, 90 Fenchurch Street, E.C., and John Buchanan, Alma Street, Gallowgate, Glasgow. Chemical fire-extinguisher.

12,752. Sept. 6, 1915.—M. Okada, 17 Minamimaki Oho, Kyobashi Ku, Tokyo. New or improved cracked glass material.

13,081. Sept. 13, 1915. (Dated under International Convention, Sept. 14, 1914.)—Capt. J. J. W. H. van der Toorn, Nassauplein 19, The Hague. Manufacture of a cement for building constructions and building construction elements.

2,421. Feb. 16, 1915.—G. W. Mottram, Cliffe View, Manchester Road, Deepcar, near Sheffield. Apparatus for introducing gas into intimate contact with liquid sewage.

2,801. Feb. 22, 1915.—William McMaster and W. S. Cash, Vermilion, Alberta, Canada. Apparatus for raising water.

5,283. April 8, 1915.—Joseph Carlier, 54 Bouverie Road West, Folkestone, Kent. Machine for making setts.

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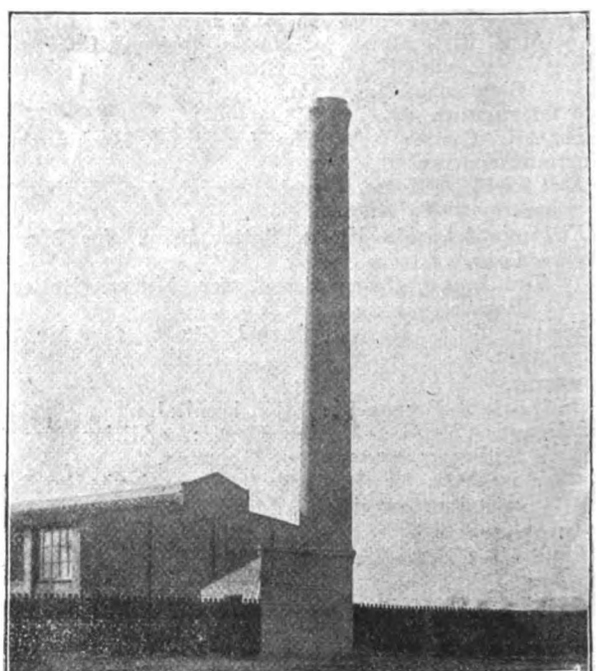
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THE ARCHITECT

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FORTHCOMING EVENTS.

Monday, April 3.

Victoria and Albert Museum: University Extension Lecture XXIV. on "Modern English Architecture," by Mr. Banister Fletcher, F.R.I.B.A., at 4.30 P.M.

Wednesday, April 5.

Royal Society of Arts: Paper entitled "Painting by Dipping, Spraying, and other Mechanical Means," by Mr. Arthur S. Jennings, at 4.30 P.M.

Royal Archæological Institute: Papers by Dr. A. C. Fryer, F.S.A., and Dr. Philip Nelson, F.S.A., to be read in the apartments of the Society of Antiquaries, Burlington House, W., at 4.30 P.M.

Institute of Sanitary Engineers: Paper entitled "Planning for a Manufacturing Town of 50,000 Inhabitants," by Mr. A. Le Marchand, at Caxton Hall, W., at 7 P.M.

Carpenters' Hall: Lecture entitled "British Forestry before and after the War," by Mr. W. Dawson, M.A., B.Sc., at 7.45 P.M.

LAND SETTLEMENT AFTER THE WAR.

THERE can be little doubt that when the demobilisation happily arrives of the millions of soldiers in the British New Armies, there will be many who will not be content to resume their former sedentary or indoor occupations. Also it will be recognised—indeed, it is already recognised—that it is to the advantage of the nation that the agricultural population of the country and the supply of home-grown food should both be increased. The solution of these problems clearly points to the desirability of the settlement or employment on the land of discharged sailors and soldiers. Hence the President of the Board of Agriculture and Fisheries has done well to appoint a Departmental Committee to consider the question of land settlement for sailors and soldiers, and the Introduction and Part I. of their final report has now been issued. Their interim report made in September last recommended that a free course of training at an agricultural college should be given to fifty disabled sailors or soldiers, but has not been printed or published.

The report of the Committee expresses their belief—and in this we think there will be general agreement—that the duty of carrying out a scheme of land settlement for ex-Service men must in the main be undertaken by the State, although this does not exclude the acceptance of the assistance which private landowners or voluntary societies can, and no doubt will, give.

It appears to the Committee that the existing machinery of the Small Holdings Act is not sufficient to achieve the object in view. The working of this Act applies only to applicants who already possess sufficient experience and capital to justify the expectation that they will successfully cultivate a small holding, whereas, although there will, no doubt, be some ex-Service men who come under this category, there will probably be a far larger number with no previous experience of agriculture to whom it will be necessary to afford some preliminary training and instruction before they can safely be placed in holdings of their own.

The Committee therefore recommend that the State, acting through the Board of Agriculture and Fisheries, should undertake the provision of land for all suitable ex-Service men who desire fully-equipped and self-supporting small holdings, and who are prepared to settle in the places where land can be provided, under the conditions that the State considers necessary to their success.

The scheme of the Committee is briefly land settlement by the State on the colony system. By the colony system we may better understand the formation of model village communities, and the preference for that system is rightly based upon, first, the possibility it affords for the provision of expert guidance and business organisation; and, second, the opportunities it provides for social life amongst members of a community.

The size of the colony which the Committee considers should be the minimum is a village community of at least 100 families, all interested in the cultivation and development of the land, but including amongst them those engaged in the trades subsidiary to agriculture. The minimum acreage for a fruit and market gardening settlement should be 1,000 acres, and for a settlement on dairying or mixed holdings 2,000 acres. The reason assigned for limiting the minimum areas to these figures is the difficulty of getting more, but whenever enough suitable land is available in the immediate neighbourhood the Committee is of opinion that it would be better economy for the State to take a larger acreage, which would reduce the cost of management and be an advantage from the point of view of collective marketing.

From a national point of view, one great asset of small holdings is that they naturally lead to intensive cultivation. Hence more national wealth is produced from the land. The report discusses the types of small holdings suitable to ex-Service men, giving preference to that containing an area of from three to five acres devoted to fruit and market-garden crops; alternatives are the small grass-holding of not less than 25 acres employed in dairying and the small mixed farm of from 35 to 50 acres, comprising both arable and grass land. The Committee think it of the greatest importance that both pig and poultry keeping should be combined with each type of holding considered, but they give a warning that poultry farming cannot be recommended as a staple production.

The establishment of colonies of small holders, many of them inexperienced, demands, for any hope of achieving success, two essentials: expert guidance and collective marketing. Therefore the Committee's scheme for each colony includes the provision of a central farm under the control of an experienced manager appointed by the Board of Agriculture. At first the whole of the land would be included in this farm, on which men with no previous experience would be offered employment at a weekly wage, together with a cottage and garden, and as soon as any of the men had acquired sufficient practical experience and showed promise of becoming satisfactory small holders, a portion of the farm near their cottages would be let to them, provision being made in laying out the farm that adjoining land could be added to their holdings in course of time, as they became capable of taking a larger area. The Committee, by the way, strongly advocate that the settlers should in all cases be tenants of the State and not permitted to purchase their holdings. Strong arguments in favour of this course are urged, and if the facts quoted are correct there would appear to be considerable validity in those arguments.

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Success in small holdings is intimately dependent on the successful marketing of the cultivator's products, and this can scarcely under present-day conditions be effected without some collective or co-operative organisation. This the Committee propose to provide by the establishment in each fruit and market-garden colony of a depôt for the produce of the colony, which should there be collected, graded, packed, and despatched to market under the control of the director of the colony. In connection with the depôt provision would be made for dealing with any surplus produce which could not be immediately sold by the establishment of a jam factory, pulping and drying plant, a creamery, a cheese factory, or other suitable means.

The question of finance is of importance in any scheme for the settlement of ex-Service men on small holdings. The Committee take the view that the incoming tenant should have some capital for the purchase of tenant-right and for the maintenance of himself and family until his holding will make returns. They also recommend the establishment of co-operative credit banks, started with State-provided capital. This is a development in our national life which we have repeatedly urged in our columns as essential to a successful advance in trade and manufacture, and therefore undoubtedly to be approved in connection with agriculture.

Very rightly the Committee emphasise the necessity of opportunity for a full social life in their colonies by the provision of a club-room and village hall, a recreation ground for outdoor games, places of worship, and educational facilities. The Committee also point out the advantage of fostering village industries as a valuable adjunct to purely agricultural work.

A plan is appended to the report showing how the Committee would propose to develop a specific estate of 1,000 acres, that they have in view, as a fruit and market-garden colony for 112 small holders. The Garden Cities and Town Planning Association have issued a report on the proposals of the Departmental Committee, which, on the whole, they generally approve, but fall foul of the plan and offer instead an ideal plan. This, though undoubtedly superior, is of the symmetrical pretty pattern order, only applicable to an ideal site made to fit, and under the circumstances that must control the Board of Agriculture in the carrying out of a scheme of land settlement for ex-Service men, incapable of realisation. At the same time it emphasises the desirable points in planning a small-holdings colony, many of which are lacking in the Departmental Committee's plan, which savours too much of the ordinary suburban estate agent's type of working-class property. Undoubtedly the estate selected by the Departmental Committee is a difficult one to develop into an ideal or approximately ideal small-holdings colony, and we are not surprised that the Garden Cities and Town Planning Association took the easier course of making their plan for an ideal site, instead of showing how the Committee's estate could be better arranged, a problem by no means incapable of solution, though assuredly not easy.

We trust that the recommendations of the Departmental Committee may be immediately adopted by the Government and handed over to the Board of Agriculture for execution before it is "too late."

NOTES AND COMMENTS.

DRY-ROT troubles not only architects but mining engineers, whose pit-props suffer from the attacks of Merulius lachrymans and the other fungi whose operation is included under the general term "dry-rot." Hence the Midland Institute of Mining, Civil, and Mechanical Engineers were prepared to listen to a paper on "Pit Timber and its Preservation" by Dr. Percy Groom, Professor of the Technology of Woods and Fibres at the Imperial College, London. It would, however, appear from the reports in the local Press that the hard-headed Yorkshiremen were not much impressed by the Professor's plea for research on dry-rot, as the verdict was that in the majority of pits in Yorkshire the timber in them got broken before it had a chance to get decayed. Dr. Groom does not appear to have mentioned to his audience that under the auspices of the Government extensive research on wood-destroying fungi has been made in Germany, and voluminous reports thereon have been published.

At the annual dinner of the Sheffield Master Builders' Association, war prices naturally bulked largely in the speeches.

Alderman W. C. Fenton, in proposing "The Federation of Building Trades Employers," spoke of the great shortage of houses, and said the possibility of adopting new and cheaper materials and securing economies in the design of cottages was attracting much attention. At present the cost of building materials was enormous, and in some respects a scandal. This was particularly the case with regard to timber. Certain classes which before the war cost £9 a standard were now costing £30, half of which was for freight. It was time the Board of Trade stepped in and fixed prices of building materials, as they had the power to do.

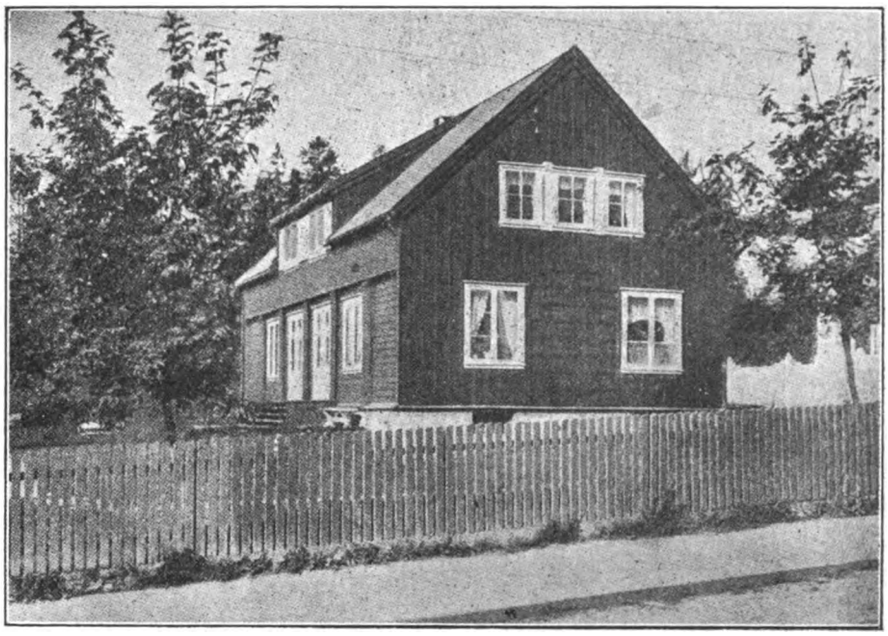
The President of the Association in reply said that one of the serious difficulties which they had to face owing to the war, was that of estimating for work. If they attempted to cover themselves for the probable increases in the cost of material and wages, their tenders would necessarily be extremely high. This had been under the consideration of committees for some time, and they had also had meetings with the architects. They considered that the fairest method at present would be to tender for work on current prices, and that fluctuations in the market above or below a certain percentage —say 5 per cent.—should be met by increases and reductions respectively. He thought this would be a fair risk, as, in the ordinary course of things, it was not likely that prices would vary much more than 10 per cent. The Architects' Society were recommending the careful consideration of this system to their members who were preparing for new work, and the Corporation had inserted in their building contracts a clause which would operate in a somewhat similar manner.

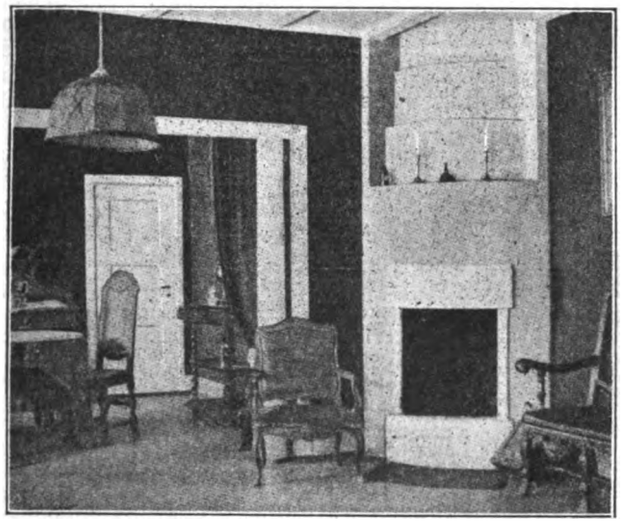
In the annual report of the Council of the Scottish Artists' Benevolent Association presented at the twenty-seventh annual business meeting, it was stated that £454 had been paid by the Association during the past year to the widows, daughters, and sisters of deceased artists, most of whom were unable to do anything for their living on account of illness or old age. The sum of £615 had also been paid during the year to living artists who had experienced a serious falling off in the sale of their pictures since the outbreak of war. It was also stated that the capital fund of the Association now amounted to nearly £15,000.

Sir James Guthrie, in moving the adoption of the report, said he was sure they all heard with pleasure of the activities that had characterised the Association during the past year, which had been a year, of course, of trial for everyone, and for no class of people more than for artists and their dependants. While the horror of war brooded over the civilised world, a horror that at times almost seemed to involve the destiny of humanity itself, it behoved all who cared for the arts to see to it that while they did not yield to anyone in their sense of national duty in this hour of the national danger, they had a duty to perform to the arts which was never a greater call upon them than it was in days such as these. They, no doubt, heard from time to time that in such a crisis as this art must be pushed aside entirely, that it was a mere luxury, one of the mere accessories of life which ought to vanish on the very touch of stern realities. At a meeting like that he did not think it was necessary to say anything in regard to that very plausible but very poor conclusion. Art was one of the essentials of life, and perhaps the need for art was never more clearly

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A NORWEGIAN EXAMPLE OF WAR-TIME ECONOMY IN HOUSE BUILDING.

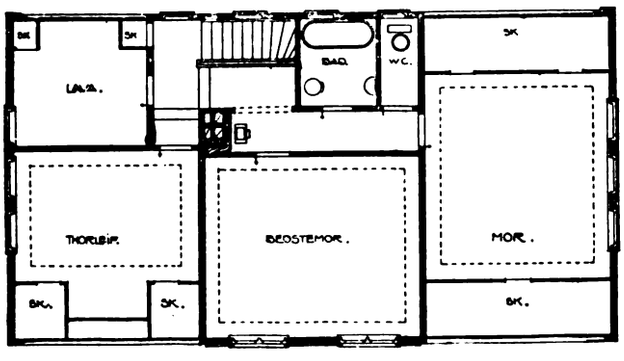




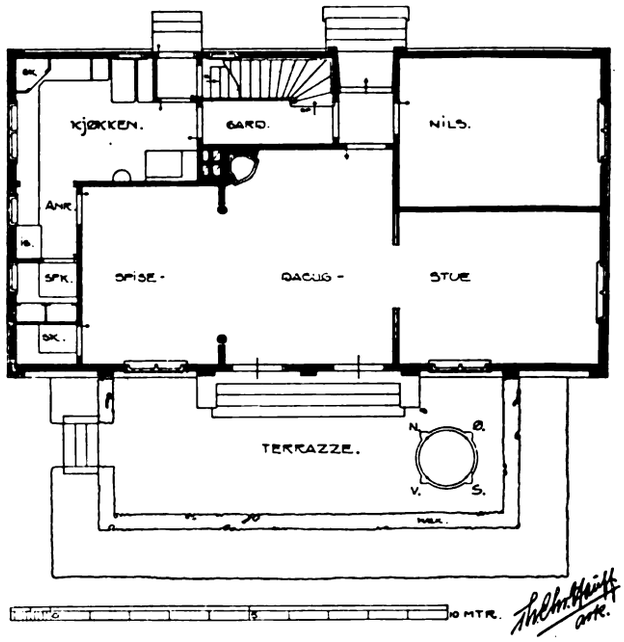
INTERIOR OF HALL-LIVING ROOM.

[From *Arkitektur og Dekorativ Kunst.*

MR. TH. CHR. HAUFF, Architect.



FIRST FLOOR PLAN.



GROUND FLOOR PLAN.

demonstrated than it had been in this time when materialism had been so rampant, and had been such a danger throughout the world.

We can scarcely sympathise with the suggestion by the City Coroner that the Corporation of the City of London should bring a civil action in the Chancery Division against the Trustees of London and British Museums for the recovery of the alleged treasure-trove of Tudor jewellery. It may possibly rightfully belong to the Lord Mayor, Commonalty and citizens of London, but the enjoyment of it by such owners cannot

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be said to be vitiated by its safekeeping and exhibition in the London and British Museums.

A long article in the "Liverpool Courier" advocates preferential rating as an attraction for new manufacturing industries to establish themselves on the banks of the Mersey. Part of the writer's argument runs thus:

Preferential rating as an inducement to new commercial developments and a furtherance of existing industries is a proposition for which there is much to be said. The benefits which will follow the introduction of new industries to Merseyside are two-fold. There is the benefit to the municipality in various ways and to the railways and shipping companies of the port. There are also opened up new avenues of employment for that superfluous labour which is likely to accrue after the war. Female labour, which has now given practical proof of its worth, cannot be turned adrift; rather will economic conditions make it imperative for such labour to be encouraged in the future. There are also the disabled soldiers, many of whom will hope to find work waiting for them in the factories in regard to which their physical deficiency will be no handicap.

A further benefit will be the inevitable provision of suitable houses for the workers on a pre-conceived plan, and it is here where the opportunities for town-planning may be utilised so that the development of both the factory and residential quarters for the homes of the workers can be carried out simultaneously, quick access and means of transport being kept well to the fore in the mode of development. It is not necessary that every factory should resemble a barracks in its elevation, but examples may be quoted where factories have been built with planted open spaces in front of them and with an elevation that suggests architectural treatment and not as is usual an elevation devoid of beauty or taste. It may also be suggested that strips of land may be reserved in the outer areas which are not to be built upon, and are to remain as permanent open spaces, thus forming a buffer between the factory area and the residential areas. By this means we should ensure belts or zones of open spaces on the confines of our factories, where the busy worker could take his recreation or pass between his home and his work without plunging into crowded thoroughfares. His cottage, his park, and his work would thus be linked up in unison and not scattered far and wide, as is the case at present.

It would, no doubt, cause amusement to some of our readers to peruse in the pages of our contemporary, the "American Architect," an account of the pageant and procession with which the thirty-first annual exhibition of the Architectural League of New York was opened last month. In the procession we are told that architects wore robes of dark red, painters wore blue gowns, while the sculptors' costumes were of green. Preceding this vari-coloured assemblage and leading the ceremonial procession to the galleries were banner bearers, trumpeters, and heralds. In the body of the procession were the medal winners of the year, accompanied by their sponsors. The pageant was enacted in a Secret Garden, with vestal virgins kneeling around an altar as a guard to the sacred fire of Inspiration. Girls in Greek costume and their High Priestess performed dances in the garden to the accompaniment of an orchestra, masked behind flowering shrubs. Some might perhaps regard these proceedings as exquisite fooling, but it must be remembered that in the United States processions by all sorts of societies and organisations are a feature of the social life of the community, and, for the most part, marked by blatant vulgarity. Therefore we think that our confrères did well, as an exceptional occasion, to show how processions and pageants can be artistically managed.

In the Belfast Municipal Art Gallery and Museum we are pleased to learn that an exhibition has been opened of works by W. H. Lynn, R.H.A., the architect, and S. F. Lynn, A.R.H.A., the sculptor, two brothers who have worthily maintained in their day the reputation of Irish artists, and by whose decease the artistic world of Ireland is the poorer.

ILLUSTRATIONS.

ITALIAN ETCHINGS AT THE SOCIETY OF BRITISH ARTISTS.

WE have the pleasure of illustrating Professor Melani's article on the revival of engraving in Italy as exemplified by the exhibition now open at the Society of British Artists with reproductions of some of the etchings there to be seen.

THE ITALIAN ENGRAVERS AT THE ROYAL SOCIETY OF BRITISH ARTISTS.

By Professor ALFREDO MELANI.

UNTIL quite recently contemporary Italian art was but little interested in engraving and engravers, and only to-day can it be said to have awakened to new activity. Nor did any branch of the engraver's art escape this neglect: copper, wood, steel were abandoned by the engraver, as were also etching, lithography, aquatint. Photo-mechanical processes banished hand-engraving, and the artist who, in his leisure moments, allowed himself to be seduced by the charm of an etching, was in Italy isolated and ignored. Eleuterio Pagliano, Mosè Bianchi, Colombo Borde, painters; Giuseppe Grandi, sculptor; Luigi Conconi, architect and painter, are some of the few worthy etchers who sought to maintain Italian engraving at a high level. As for the branches touched by the engraver, we must go back a long way, although Italy is the home of the celebrated "Calcografia Camerale Romana," founded by Clement XII. (738), and was honoured by masters like Raffaello, Morghen, Paolo Mercuri, Paolo Toschi, and Luigi Calamatta, chalcographers who flourished in the century which has just come to an end, together with Tommaso A. Juvara. The same may be said of wood-engraving, which had to sustain an unequal fight with photographic engraving processes, and was defeated after having lost the commercial ground to which it was reduced. Thus, in Italy, the sale of engravings was carried on solely, and with difficulty, by means of those imported from abroad, and our shops offered, as they still offer, for sale only English, French, and German prints.

In one of my books, "Nell' Arte e Nella Vita" (published by M. Hoepli, Milan, 1904), I remarked bitterly that which I am now repeating, and urged Italian engravers to greater efforts to reconquer the position occupied in former centuries by Andrea Mantegna, Marc Antonio Raimondi, Michelangiolo da Caravaggio, and Stefano della Bella. I advised my compatriots who had confined themselves in engraving to the reproduction of old masterpieces to shake off the fetters of the past and to give original contents and form to the art of engraving, creating pictures, without following another's inspiration. I do not venture to suppose that my advice alone has been of effect, although certainly the direction of the new activities in Italian engraving corresponds to that indicated by me, and the awakening is of yesterday, limited for the present to etching and wood-cutting. It is not a humble flame which may unexpectedly be quenched, because it is continually fed, and its effects are perceived daily, even under the present tragic circumstances. Indeed, the group of Milanese engravers which forms the backbone of the new movement organised the present exhibition at the Royal Society of British Artists.

I said that the awakening is limited to etching and wood. Thus, neglecting other branches, including lithography, etching gained a good number of artists, painters, and a few architects, and wood seduced a group of young men, more enthusiastic than the former. A city of secondary importance, Spezia, thanks to the incitement

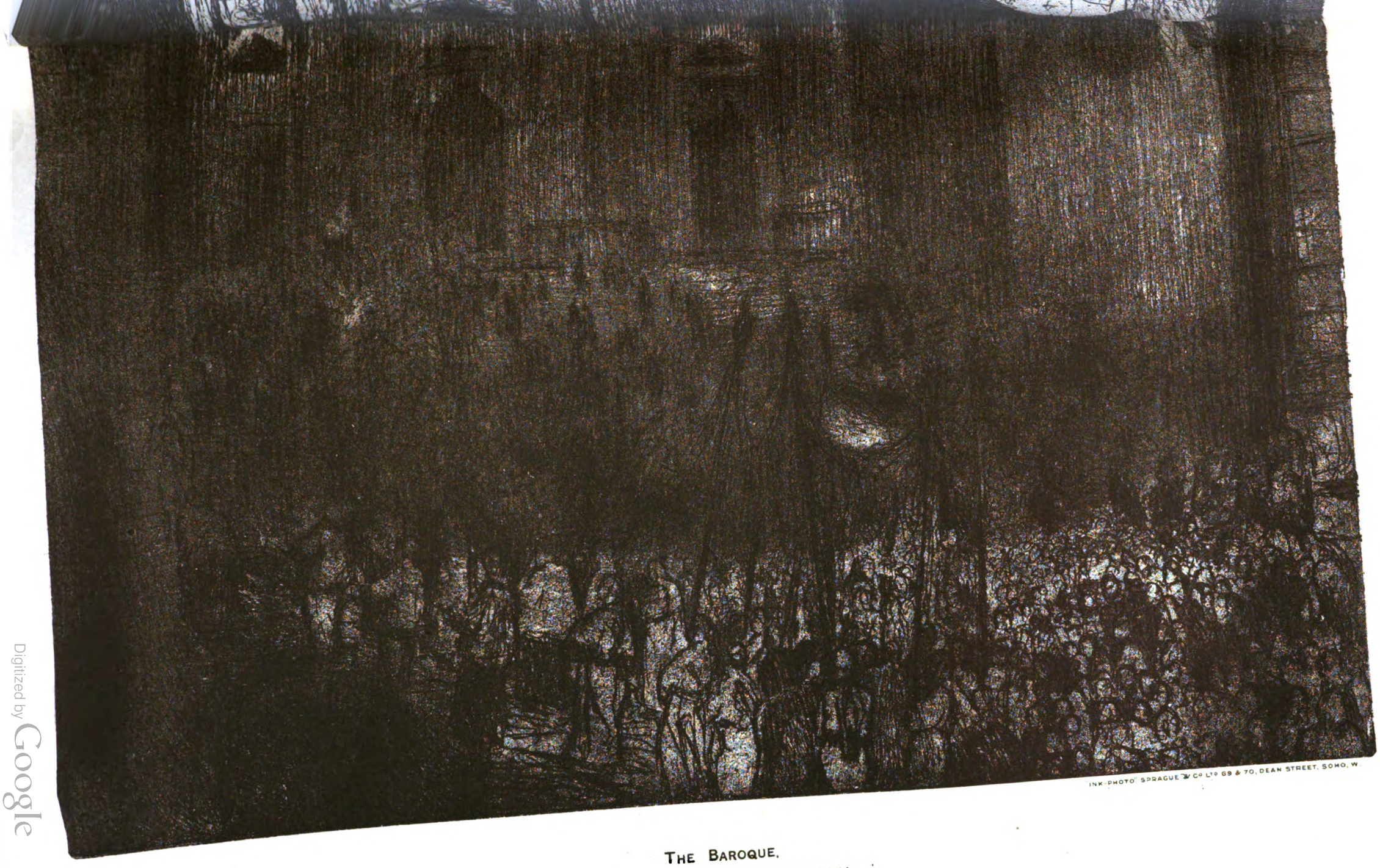
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THE BAROQUE.

From an Etching by FRANCESCO CHIAPELLI.

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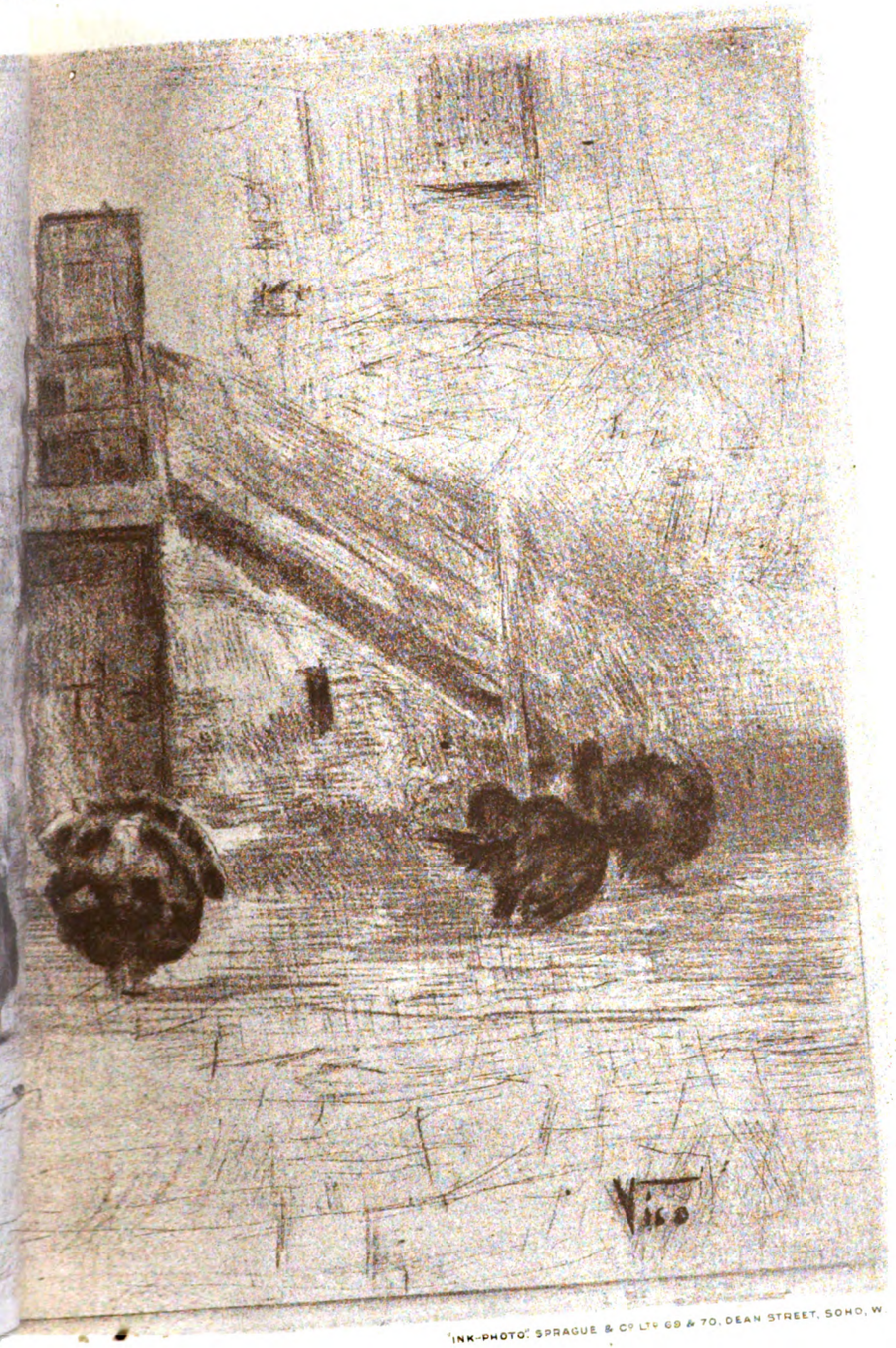


I TACCHI

From an Etching by

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ICO VIGANO.

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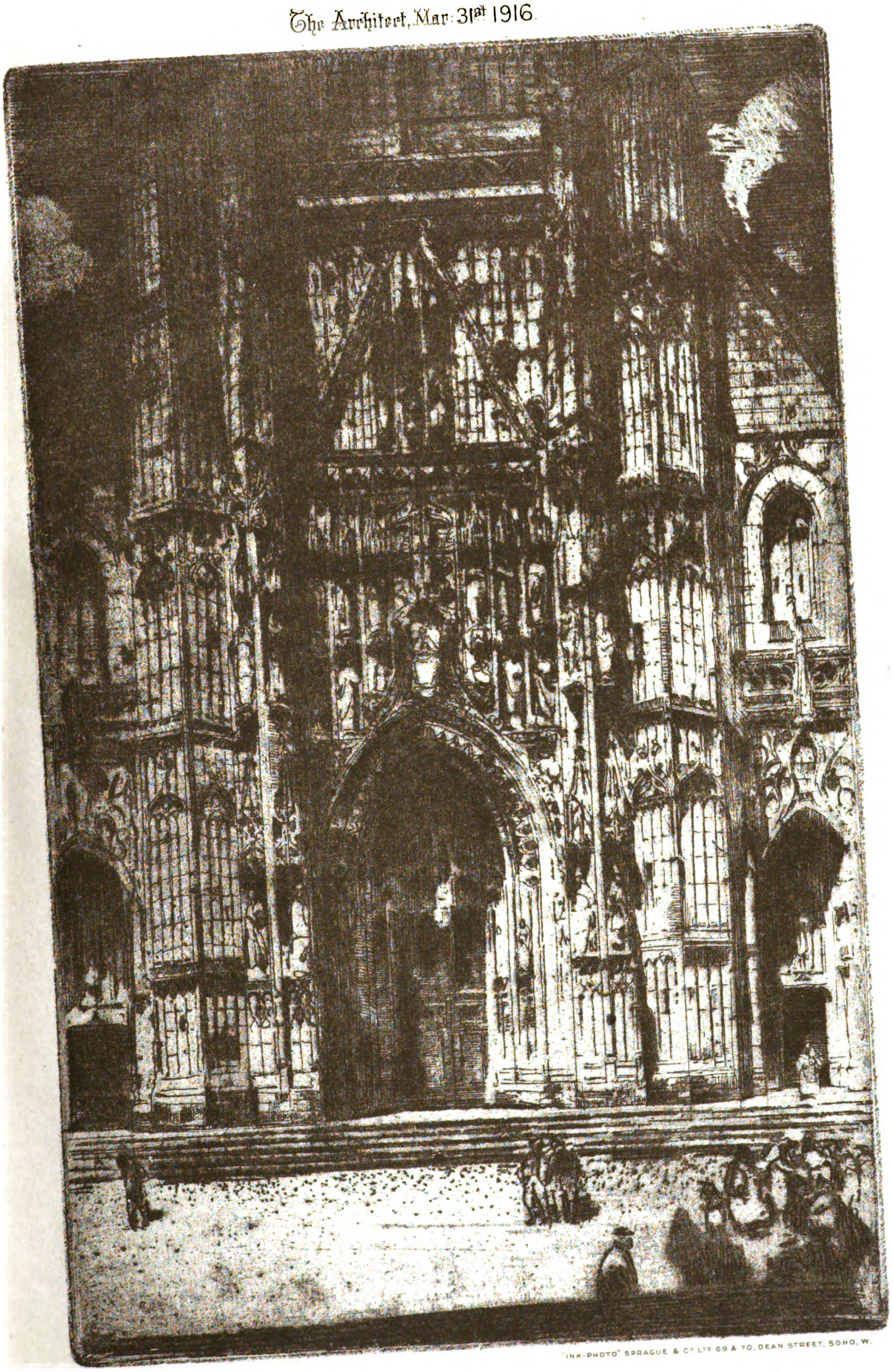
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In the Old Quarter of CORBEIL.



"INK-PHOTO" SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.

The Portal of ST. RIQUIER.

From an Etching by G. GREPPI.

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of a writer, Ettore Cozzani, became the seat of an ardent zylographic movement, to which I myself belonged, encouraging and praising. Thus, was formed the "Italian Corporation of Zylographers," and also a nobly-planned review "L'Eroica," whose life, interrupted by the war, will be continued, let us hope, in the faith and eternal youth of art. All this related to the present modernism. Emilio Mantelli, Giuseppe Biasi, G. C. Sensani, Felice Casorati, Niccola Galante—my old pupil, the most "futurist" of the group—Lorenzo Viani, characterise the movement, which comes to a head, I might say, with Ettore Cozzani, in a frenzied ardour for research, in an ingenious distillation of lines, a powerful nervous synthesis, a primitive ingenuity which attracts or repels the observer, according to his temperament. The most prominent among the zylographers of the Corporation is Adolfo de Karolis, who is Italian, in spite of his exotic name, and the least daring, being faithful to tradition, which with him goes from Botticelli to Michelangiolo and Tintoretto, engraver and fresco-painter.

As Spezia sums up the zylographic movement, or at least encourages and almost governs it, so Milan watches over and envelops the branch of etching, and it was in substance Milan that gave orders for the exhibition at the Royal Society of British Artists, extending its horizon beyond the confines of the metropolis, bringing together young men and old from Florence, Venice, Rome, Turin, wherever a faith, an effort, a soul vibrates and kindles to engraving. Thus, Milan is indebted, more than any other Italian city, to English hospitality—indebted to Frank Brangwyn, the painter and etcher, well-known in our country, who acted as intermediary between Milan and London, that is, between the Royal Society of British Artists and l'Associazione italiana d'Acquafortisti e Incisori (the Italian Association of Etchers and Engravers), founded a few years ago (1900) in the above-mentioned city, and Milan, as well as Italy in general, hopes that the artistic success will correspond to the generous hospitality and the noble moral aim. It is known that half the entrance money to the exhibition is to be given to the Italian Red Cross, and the initiative is assisted by influential English people, and has the support of the Press.

Visitors to the Royal Society will therefore be called upon to judge not an organised confederation of engravers but an art which seeks to recover a hidden power. It is thus in vain to seek to discover the national style in the engravings now on view in London, which represent the state of the Italian æsthetic conscience, that is an uncertainty of aspects, heedless of traditions which might prove disconcerting at the moment. All our art is at present swayed in various directions, and Sargent, Zuloaga, Libermann, Sorolla, Zorn, Raffaelli, Besnard, Cezanne did not paint in vain for our youth. Thus, amongst the engravings side by side with the meditation of an old artist poet, Vittore Grubicy, rises a youth, Anselmo Bucci, who, in his prints, having lived at Paris, displays the Parisian boulevardier style in his clean-cut heads, a caprice à la Chahine, as is found in Raffaelli's views, and some of Brangwyn's depth may perhaps be found in the young artist Francesco Chiappelli, tempestuous and sombre, compared to the disdainful formality of Carlo Erba, and the elegant architectural sobriety of the architect-painter, Giovanni Greppi. Erba, a clever young painter, being at the Front, did not arrive in time to exhibit.

Faithful to the Italian spirit are Vico Viganò, President of the Association; Carlo P. Agazzi, who treats art daringly; Enrico Vegetti, an old etcher, as calm and measured as Luigi Conconi, a painter-architect, is bizarre. This latter, with the others, will find expression given to his views at the Royal Society, and Conconi stands out, whether his subject be architectural (he himself being an architect), or figure (his "Ebbrezza" is extremely sensitive). He is not hesitating, and is a mature artist, as is young Cesare Frattino, who in architectural Roman scenes scholastically recalls the great Giambattista Piranesi, "Le noir cerveau de Piranèse," Hugo would say.

There is a variety of form and temperament in a concert explained and commented upon by both old and young, especially in etchings, varied in subject and treatment. Therefore, Pietro de Francesco, a young, rather timid Sicilian artist, but a good draughtsman, does not equal in intensity Celestino Celestini, a master of finesse, a little sonorous and noisy, but very skilful. Thus from him springs a branch of engravers, present in London, educated at Florence, in this re-awakening of energy in engraving, to which artists of all ages and all grades belong. Thus London will be called upon to judge the initial efforts as an etcher of Ernesto Bazzaro, the illustrious sculptor, who necessarily gives to this branch of art the anatomical sense of his statuary. Near him and the other artists mentioned are Giorgio Belloni, Vincenzo Stanga, Francesco Arata, Carlo Casanova, Ugo Martelli, who exhibit chiefly landscapes and architectural subjects. Nor is the warlike note missing at the Royal Society, thanks to Bucci, who has a "Montmartre" and "Rouen Cathedral," both intensely vivid impressions, with traces of the war.

There are a few aquatints and lithographs which attract visitors, and Giuseppe Grazioso, painter, sculptor, and etcher, appears as a lithographer at the Royal Society, to show himself perhaps a trifle too rapid a worker, as he has done for some time, stronger in the past than to-day. Monotypes are excluded from the Royal Society.

Taken as a whole the exhibition is rich in subjects, varied in exhibitors: it contains more than 300 engravings. And from the point of view of engraving it strives to be an affirmation of attitudes. If there should be found signs of immaturity, if criticism should not in all cases be favourable, this does not compromise the fundamental aim. There is at the Royal Society a specimen of artistic Italian work of youthful energy, slowly moved to the conquest of a lost way. Faith is not wanting, the vital seeds are germinating, and we in Italy are not going to lose the fine opportunity of sending these seeds, animated with real vitality, without exaggerating their importance.

We should like, therefore, in Italy, this spring-time of activity in engraving, in addition to art in its pure expression (pure and simple), to benefit art in its application to books, the illustrations of which, in our country, have reached the last word in vulgarity. I was invited to take part in a recent conference, promoted by the "Risorgimento Grafico," with the object of effecting the reform of scholastic books, including the engraving of illustrations.

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—XIII.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

FURTHER east the Via Duomo leads northwards to the Duomo of Verona, a Romanesque edifice, around the question of the age of which there is very considerable disagreement.

Possibly the eight century, or the beginning of the ninth century, is somewhere near the date of the completion of the early fabric.

This early Italian church is certainly picturesque as it is seen to-day; but little excepting the apse and part of the choir seem to remain of the original structure. The rest being certainly not earlier than the twelfth century. The nave and Gothic windows of the façade being of the fifteenth-century date.

Along the north and south sides are a series of apses, and these with the windows in the west end of the aisles, and the handsome south portal, form the principal features externally.

This porch, last named, is singularly quaint and exceedingly distinctive, the upper portion being very similar to the porch of San Zenone. The canopied top is carried upon short columns resting upon a marble lion on one

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side, and a grotesque carved corbel on the other side, which are in turn supported on taller columns with carved capitals, and the bases rest upon large blocks of marble. The fine porch on the west front is supported on shafts of two stages in height, and bases of which rest on the backs of huge marble lions, the shafts of the upper stage are surmounted by a flat pediment.

Behind the columns on each side of the door stand the figures of Roland and Oliver, the paladins of Charlemagne, in rough relief, which, according to the inscription

"Artificem quarum qui sculpserit haec Nicolaum.
Hunc concurrentes laudent per saecula gentes."

were executed by one Nicholas in 1135.

The apse adjoining the south portal is particularly beautiful with its thin Corinthian pilasters and carved and decorated frieze.

Close to the church rises a campanile in an unfinished state, designed by Sanmicheli.

It would seem that the striking interior is the result of alterations and rebuildings, carried out in the fourteenth century, and discloses a wonderful divergence of styles, all creating a composition of perfect harmony.

The style of the Middle Ages and that of the Italian Renaissance are combined with perfection in result. This fine fabric has only five bays in length, but of such great dimensions that the nave and aisles alone measure about 225 feet by 97 feet inside.

The columns are very lofty and are of red marble, moulded, and with heavy capitals of carved foliage.

One can scarcely term the ceiling other than ugly; but the interior as a whole is supremely beautiful and solemn. As in other great Italian churches, there are two organs, placed above the choir stalls, with specially beautiful cases, flanked by tall Corinthian columns.

Above the rood-loft, designed by Sanmicheli, is a beautiful bronze crucifix by Giambattista da Verona.

There are frescoes above the high altar designed by Giulio Romano, and executed by Torbido in 1534.

The ancient baptistry, San Giovanni in Fonte, approached through a corridor to the left of the choir, is a detached twelfth-century church. A very pretty little basilica in the Romanesque style, with a nave and aisle ending in three apses, lighted by a small clerestory, and with some columns which are probably Roman.

The octagonal font, carved out of one large block of Verona marble, with its excellent twelfth-century Romanesque reliefs of eight subjects, beginning with the "Annunciation" and finishing with the "Baptism of Our Lord,' is of great size and stands in the centre.

The basin of the octagonal font is nearly 7 feet in diameter, and within this great font there is a smaller one of quatrefoil shape.

In the Romanesque cloisters on the north side of the church is some fine early-Christian mosaic work.

Around this great Italian cathedral clusters much of absorbing interest for study if time is not too pressing, and a considerable time can well be spent with much profit and pleasure to the architectural student.

On the north of the Piazza del Duomo is the Palazzo dei Canonici. This structure, which is of roomy dimensions, contains the Biblioteca Capitolare, really the library belonging to the cathedral, with its 18,000 volumes, together with priceless MSS. of great age.

To the east of the Duomo one sees in the Piazza Vescovado the Vescovado or Bishop's Palace, a building which has passed through many epochs of alterations and reconstructions, with a Renaissance façade attributed to 1502, although it was possibly 250 years earlier than this that this edifice was much altered and rebuilt.

The doorway leading to the palace is a specially fine piece of work, supposed to have been the work of Fra Giocondo of Verona. A pretty little chapel is contained in this building, which, in turn, contains three very fine and notable paintings by Liberale da Verona, representing the "Adoration of the Magi," the "Nativity of Our Lord," and the "Passing of the Blessed Virgin." There is also a "Madonna," by Morone, and a "Raising of Lazarus," by Caroto.

In the near vicinity of the Duomo there are a number of other buildings with ancient and interesting histories, houses of the old Patrician families of Verona, the Palazzo Miniscalchi, the work of Verona's great architect, Michele Sanmicheli, standing close by in the Via Pigna. The adorning of the exterior of the latter building, with frescoes (which have suffered much at the hands of restorers), by Torbido, is typical of the age of this building.

Crossing the river Adige by the Ponte della Pietra, the two arches of which next to the left bank are Roman, but the remaining three arches and the tower on the right bank date originally from the times of Scaliger Alberto I.,



TOMBA DI GIULIETTA, VERONA.

1298, but in 1520 were practically rebuilt, lies the Roman Theatre, above the Rigaste Redentore, on the west slope of the Colle San Pietro.

This theatre, it is supposed, dates from the time of Augustus, although no date can, with any degree of accuracy, be fixed as to when this city came under the influence of and subject to Rome. The Roman Theatre is, next to the amphitheatre, the most important building of antiquity of the city, and, with the latter, form her most classic monuments.

This great erection was in the tenth century known as the Palatium of Theodoric, and private dwellings and religious temples occupied its area since the early Middle Ages.

In 1834-61 Andrea Monga partially explored this building, but it was not until about twelve years ago that the whole structure was uncovered by the municipality.

Entrance is obtained from the Rigaste Redentore, and through the tunnel-passage the semi-circular orchestra is reached.

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The auditorium, which is in the form of a semi-circle, is 113 yards long, and there are twenty rows of marble steps or seats divided into segments by narrow staircases, some of the supporting walls of the highest part of the auditorium having escaped destruction.

A little church, Santi Siro e Libera, with a fourteenth-century Gothic façade, is reached from the lower seats in the theatre by a double flight of steps which date from the end of the seventeenth century or beginning of the eighteenth century, and close to this church there remains a fragment of the fifteenth-century convent of San Girolamo. In front of the bridge before mentioned a steep pathway with steps leads to the Via San Carlo and the Castello San Pietro, a very fine barracks erected on the site of a Visconti Castle by the Austrians in 1854.

From the terrace of this castel a magnificent view is to be obtained of the city and surroundings.

Close by stands the church of San Stefano, supposed to have been for many years the Cathedral of Verona, and was closely associated with the early history of the city.

The church, the original of which was probably of the eighth century, stands upon the foundations of the early church destroyed by King Theodoric, was rebuilt in the eleventh or twelfth century, and is a Romanesque basilica, the raised choir and ambulatory being of the fourteenth century.

The crypt contains the remains of many of the bishops of Verona of the Middle Ages. A little further to the west stands the church of San Giorgio in Braida, or San Giorgio Maggiore, rebuilt after 1477 and completed in the sixteenth century with the help of Sanmicheli.

The interior contains many fine pictures by Veronese and Brescian masters. Behind the high altar is a magnificent painting, by Paolo Veronese, on the subject of the martyrdom of St. George. Passing through the Porta San Giorgio, and making towards the river, the Ponte Garibaldi, one of the famous bridges erected in 1525, is crossed; and, making in a southerly direction by the Via Garibaldi, the Corso Sant' Anastasia is entered, and at the east end of this street is situate the Piazza Sant' Anastasia, in which rises the Dominican church of the same name.

This edifice was erected about 1290-1323 and 1422-1481, and is in the Gothic style, a very fine example of the combination of bricks and marble, so characteristic of Verona and other parts of Northern Italy.

The façade, which is of brick with a portal of marble, is unfinished, and is particularly rich in its lines and ornamentation, which are improved by the very beautiful marble portal. The fine old doors, with the enrichments in marble added to the fourteenth-century work in frescoed lunettes, make this entrance very striking and original.

The interior is again of very especial beauty, boldness and symmetry of proportion being the characteristics.

The nave and two narrow side-aisles are separated by twelve columns and terminate in an apse of five divisions. The late Gothic decoration of the vaulting, dating from 1437, is specially fine.

The magnificent altars are of fifteenth to eighteenth centuries date, and are in various styles, from the Classic to the Renaissance. By the first altar to the right is a monument of the Genoese Doge Giano Fregoso, afterwards a Venetian general, by Danese Cattaneo. This altar is considered one of the finest in Italy, and is Corinthian in style. It was designed and executed on 1565. The second altar is a mixture of Renaissance and Classical work. Over the third altar, which is beautified with magnificent early-Renaissance ornamentation, is a fresco of the "Entombment," by Liberale da Verona.

The fourth altar is in outline a representation of the ancient Arco dei Gravi, which once stood alongside of the Castel Vecchio. This latter altar was erected in 1539.

On the first column to the right and left on entering this church are sixteenth-century holy-water basins or stoups, supported on hump-backed dwarfs, known as the "Gobbi di Sant' Anastasia.' The one to the right was the work of Alessandro Rossi, the father of the hump-backed painter Giambattista Rossi, known as "Gobbino," and it is dated 1591.

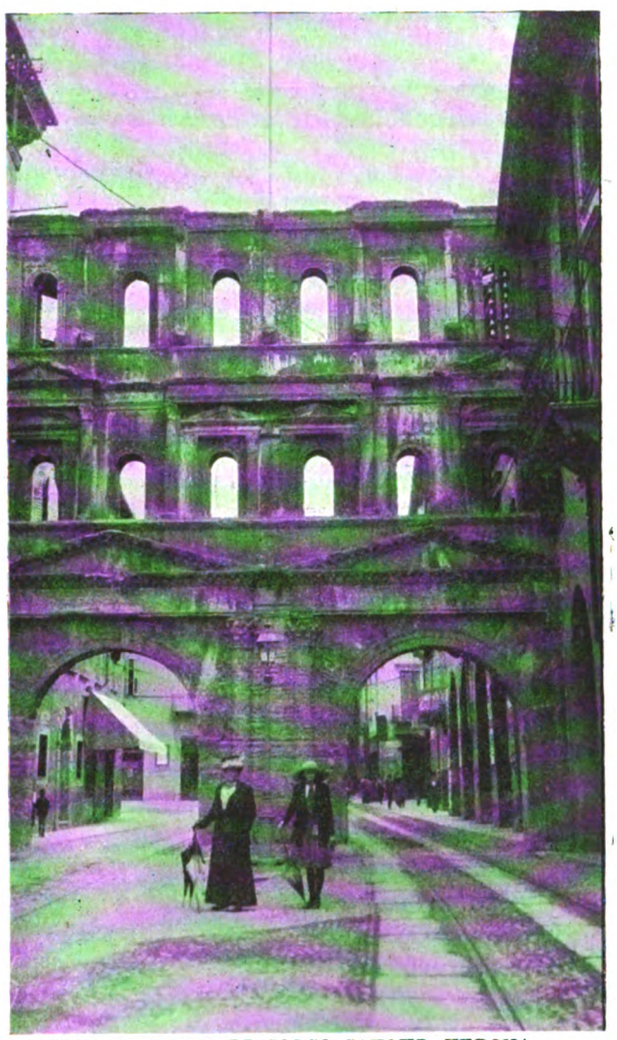
The left hand grotesque figure was the work of Gabriel Cagliari, the father of that famous master Paolo Veronese.

There is a fine early-Renaissance altar in the right transept with paintings of St. Paul, by Cavazzola, and a Madonna with Saints, by Girolamo dai Libri.

There are many other items of great interest in this beautiful edifice, too numerous to treat fully in a short description of the large number of beauties in this city.

Retracing one's steps in the Corso Anastasia to the westwards the Piazza delle Erbe is entered, the market place of Verona, and one of the most delightfully picturesque squares in the whole of Italy.

Full of market people and merry chatter, as well as fruit, vegetables, flowers, and birds. What a change to the days of the Romans, when here the Forum stood, and



PORTA DEI BORSARI, CORSO CAVOUR, VERONA.

in this square the gladiatorial combats were held in the old days before the construction of the amphitheatre.

Every nook and corner of this ancient piazza is charged to the full with historical interest of the most absorbing and exciting nature.

It is a typically foreign scene, the stately campanile of the Scaligeri Palace rising magnificently behind the comparatively squat houses, with the other features round about, producing in combination a very striking and beautiful picture.

In the centre stands the Capitello, a canopy-like erection carried on four columns, set up in its present form in the sixteenth century, but originally in the beginning of the thirteenth century, and formerly used for the

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elections of the Signori and Podestà. This erection, sometimes called the Tribune, or Tribuna (ancient seat of judgment), and again, erroneously it is said, "Berlina" (pillory), was used for the issuing of public decrees and sentences of death.

The Scaligers, it is said, took their oath of office at this spot. At the northern end stands the marble column of St. Mark, placed there, as already stated, when Verona was restored to the rule of Venice. This column was erected in 1523, and was restored in 1886. It bears on the top a winged lion, representing, so it is said, the supremacy of Venice over Verona.

The column consists of one single block of marble. Close by is the fountain erected in 1368, surmounted by an antique marble statue of Rome, called Madonna Verona. It is supposed that this statue was placed where it now stands by the Consul Valerius Palladio in the days of the Emperor Theodosius.

The Casa dei Mercanti, which dates from 1301, stands in the corner of the Via Pellicciai on the west side of the square; this brick structure, which is now the Chamber of Commerce, was rebuilt in 1878.

The very beautiful Palazzo Trezzo, formerly known as the Palazzo Maffei, stands on ths north side of the Piazza delle Erbe.

Its date is about 1668 and its style the baroque, and has many points of great interest, including a very curious spiral staircase.

A lofty tower, known as the Torre dei Gardello, erected in 1370, stands close by, and the ancient Casa Mazzanti, with its exterior frescoes and outside staircase, originally built by the Scaligers. Entering the Piazza dei Signori, or Piazza Dante, by passing under an archway, in the Via Costa, known as "Las Costa," one finds a square, as with the Piazza delle Erbe, full of ancient associations, and one which has taken its full share in all the great events of historical note and importance.

The events connected with the Scaligers are particularly associated with this square, their private residences were erected in this piazza, their seat of government was also set up here, and the tombs of the Scaligers also stand near by.

The Palazzo della Ragione, or the Palazzo del Commune, is the first building on the right on entering this square from the Piazza dell' Erbe. Its façade, so far as the main front is concerned, is of the Renaissance period, about 1524, but the remaining portion of the exterior was modernised in the nineteenth century by Giuseppe Barbieri. The original building was erected in 1183-93. A very fine outside staircase in the Gothic style leads to the first-floor portion, where a collection of modern works of art is kept. This staircase was erected in 1446-50 and stands in the Mercato Vecchio, from which leads the entrance to the Torre del Commune, about 272 feet high, supposed to have been erected in 1172 and altered in 1448. This is a fine tower and forms one of the features in a distant view of the city.

Between the Via Costa and the Volto Barbaro, on the west side of the square, stands the thirteenth-century Domus Vova, originally the residence of the Podesta. This place was rebuilt in 1659.

The battlemented tower of the Scaligers rises on the other side of the Via Dante; this at one time was used as a house of detention for those who came under the displeasure of the Scaligers, and alongside this tower stands the Palazzo Tribunalizio, formerly the Palazzo del Capitano (the seat of the Venetian governor), originally a residence of the Scaligers, now a law courts, erected in the fourteenth century, but remodelled in the sixteenth century.

The Porta dei Bombardieri, erected in the late seventeenth century in the court-yard, is a fine piece of work.

The Prefettura, another residence of the Scaligers of the thirteenth century, altered in the sixteenth century, stands on the east side of the piazza, and has a fine portal by the great architect Sanmicheli. The old Town Hall, generally called La Loggia di Fra Giocondo, the Palazzo del Consiglio, the former residence of the Lords of Verona, stands close by the last-named building, and is one of the finest Early Renaissance structures in Northern Italy.

This building was erected in 1476-93, and is generally ascribed as the work of Fra Giocondo, one of the most celebrated architects of the Early Renaissance, whose works are to be found in various parts of Italy. It is recorded that this building was erected by the order of the Venetian Republic, and it was extensively restored in 1873.

The inscription over the doorway, "Pro summa fide summus amor 1592," was placed there by the Venetians. Over this doorway are statues of famous ancient Veronese, Cornelius Nepos, Catullus, Vitruvius, Pliny the younger, and others, and on the walls are busts of celebrated modern Veronese.

The passage next to the Tribunal, the Via Santa Maria Antica, leads to the ancient church of Santa Maria Antica, with its Romanesque campanile.

This church the Scaligers used as their private chapel, and it is supposed originally dates from about 1000. It has been so extensively restored (in the original style) that little remains of the original edifice.

The tombs of the Scaligers are close by, and constitute one of the great monuments of Verona.

Over the entrance to the before-mentioned church a monument exists to Francesco della Scala, mostly called Can Grande I., who ruled as Lord of Verona from 1312 to 1329; this monument is surmounted by an equestrian statue of this prince of the house of Scala. Under the canopy supporting the above statue is a sarcophagus of marble carried upon four columns with Corinthian capitals.

In an enclosed piece of ground rest the other tombs, and there is much fine work to be seen upon close examination and study of these monuments which immortalise the genius of the dynasty. The tomb of Con Signorio is a gorgeous erection, the architect and sculptor of this wonderful piece of work being Bonino da Campione. In elaboration and costliness this monument, which was erected during the lifetime of Con Signorio, is by far the most extraordinary of all the Scaligers' monuments. It is undoubtedly the one which above all others arrests the eye of the student. It is a many pinnacled fabric, with niches with statues of warrior saints surrounding it.

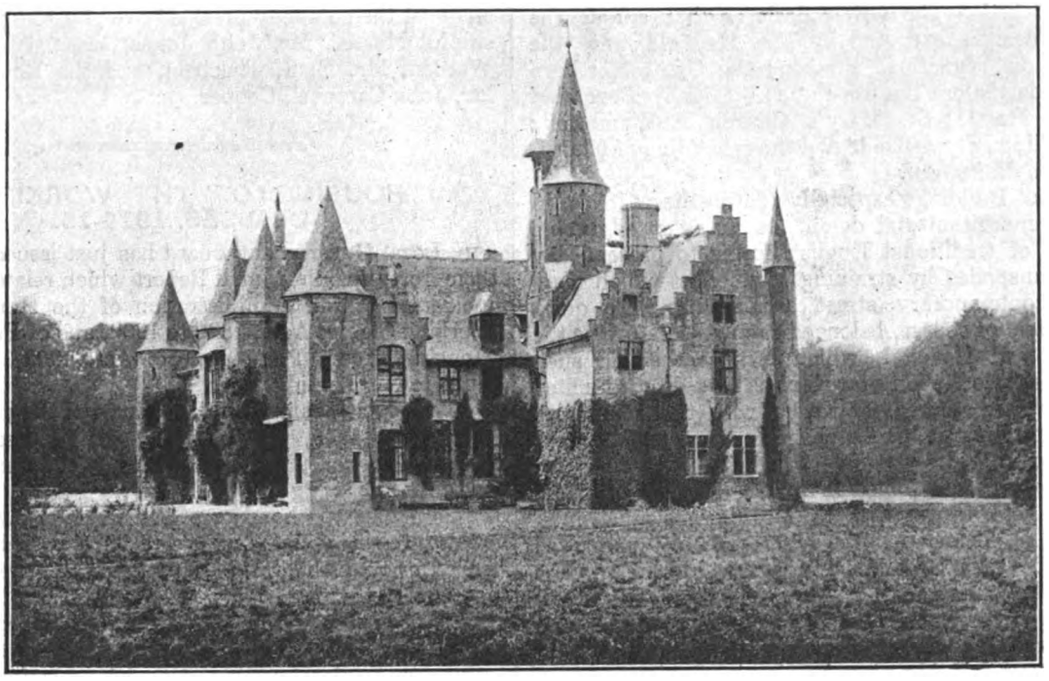
Returning to the Piazza dell' Erbe and passing on the right the Via Mazzini, a narrow street, but the principal thoroughfare of the city, and entering the Via Cappello to the south of the piazza, there stands an old house of the thirteenth century, now owned by the municipality, said to be the house of Juliet's parents, Capuletti, immortalised by Shakespeare's play "Romeo and Juliet."

Following the Via San Sebastino, a continuation of the Via Cappello, in which stands the Biblioteca Communale containing many valuable manuscripts and volumes, there rises the church of San Sebastino. Still further in the continuation of the same street, named the Via Leoni, stands the Arco dei Leoni, the remains of a Roman double gateway supposed to be coeval with the Porta dei Borsari earlier referred to. It is a fine old ruin, and probably was once one of the town gateways, and is of great antiquity.

(To be continued.)

THE Glasgow Royal Infirmary has been enriched by the gift from Mr. Robert Anning Bell, A.R.A., R.W.S., of his large picture, "The Marriage at Cana." Painted to a large extent in his studio at the Glasgow School of Art between 1911 and 1914, this important work was first seen in London at the Grafton Galleries, and, completed, in Room VI. at the Royal Academy of 1914, soon after Mr. Anning Bell was elected to Associateship. In the chapel of the Royal Infirmary the Florence Nightingale window, presented by Dean of Guild Hedderwick, was designed and executed by Mr. Anning Bell, as were the three windows opposite.

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RUMBEKE CHATEAU.

RUMBEKE CHATEAU.

By JOHN A. RANDOLPH.

IN the "Evening News" of March 21 it is announced that the new German Aircraft Service is installed at this interesting and picturesque mediæval château, near Roulers, and that a score of aircraft officers are in quarters there, with telephonic and telegraphic communication with the various bases, young officers being trained on a racecourse adjoining the building.

It is not made clear, in the paragraph referred to, whether the shed recently damaged at Brussels has been rebuilt at Rumbeke or at Brussels, nor whether the new Zeppelin sheds are being rapidly constructed at Rumbeke.

It is earnestly to be hoped that if we bomb this new aircraft spot, little if any damage (beyond broken panes) will be done to the charming château.

THE LATE MR. CHARLES HADFIELD.

WE announce with regret the death of Mr. Charles Hadfield, of Sheffield, on the 22nd inst., in his seventy-sixth year. For about half a century Mr. Hadfield has been practising in his native town, and won an enviable place in the esteem alike of his fellow-architects and of his fellow-citizens. Illustrations of his professional work have from time to time appeared in "The Architect." At the funeral on Saturday the Sheffield Society of Architects and Surveyors were represented by Messrs. A. F. Watson (President), E. M. Gibbs, T. Winder, H. L. Paterson, F. H. Wrench, C. F. Innocent, and J. R. Wigfull.

The following particulars are taken from the biographical notice given in the "Sheffield Daily Telegraph":—

Born at Sheffield in 1840, Mr Hadfield was educated at St. Cuthbert's College, Ushaw, Durham. He afterwards took up the study of architecture, in the pursuit of which the whole of his life was spent, and almost the whole of his interests were centred. He was articled to the late John Gray Weightman and the late George Goldie, and in 1864 he passed the examination of the Royal Institute of British Architects. Mr. Hadfield then became an associate of the Institute, and began practice with the late Mr. E. Hadfield in Sheffield. In 1872 a further compliment was paid to his abilities by his election as a Fellow of the Royal Institute, and he worthily upheld the honour, not only by his professional work, but also by his devotion to the interests of that institution when a member of the Council. Nor did he neglect local associations. As one of the founders and past presidents of the Sheffield Society of Architects and Surveyors, he helped to create and foster a source of valuable aid to the profession and to the city. For many years he was one of the old council of the Sheffield School of Art.

Mr. Hadfield has left an enduring mark upon the architectural records of Sheffield, for among many others he has acted as architect for the following buildings: The Gas Company's offices, the Corn Exchange, the chapels, gate-house and offices, lodges, &c., and the laying-out of the Intake Cemetery; Messrs. Pawson & Brailsford's buildings, Church Gates, Cairns' Chambers, Church Street; the new King's Head Hotel, and the new Royal Hospital. In May, 1895, he assisted His Royal Highness the Duke of York, K.G., at the foundation stone laying of the Nurses' Home of the Royal Hospital.

Mr. Wilfrid Randolph, an old pupil, in a memoir of Mr. Hadfield, states: "His most characteristic work was of a somewhat specialised kind, namely, that upon which, whether civil or ecclesiastical, he could bring to bear his wide and sympathetic knowledge of mediæval design." The writer, after saying that probably he owed something of his happy touch to the influence of the late Mr. J. F. Bentley, architect of the Roman Catholic Cathedral, Westminster, with whom he was on terms of friendship, points out that between 1870 and 1888 Mr. Hadfield cultivated the Perpendicular and Tudor phases of Gothic with singular faithfulness to precedent. He continues, "Amongst the earliest instances were the charming series of Catholic elementary schools in Sheffield (St. Wilfrid's, Heeley, St. Edmund's, Sheaf Gardens, and others), together with the picturesque little country church at Wath, and the larger one at Handsworth. More conspicuous were such local buildings as the Corn Exchange and Church Gates Buildings. The last-named certainly stands among the most successful examples of modern Gothic street architecture. It must not, however, be supposed that the Gothic work of Mr. Hadfield was confined to a single period or style. A notable instance to the contrary occurs in the small tower oratory in St. Marie's Catholic Church at Sheffield. This is a charming and original composition of a flowing Decorated character picturesquely elevated . . . . Another freer variation of style may be noted in the several small school chapels, &c., at Derwent and elsewhere in Derbyshire, where Mr. Hadfield delighted to adapt to the purposes of the moment

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the homely character of the local sixteenth or seventeenth century work." The writer declares that among the important designs executed by Mr. Hadfield were the chapels of St. Ignatius, Preston; the Great Northern Hotel, Leeds, before the fire there; the Early Decorated Church at Bootle; St. Mary's Church at Wombwell; Cairns' Buildings, Sheffield; and the rebuilding of Thornbridge Hall, Bakewell.

"Cairns' Buildings especially (dating from 1896), in its quiet composition and detail, stands as an admirable application of traditional English forms to present day purposes, unspoiled by straining after effect which mars so much contemporary street architecture. To quite another order, of course, belonged such a structure as the Sheffield Royal Hospital, which leans rather on such broad and simple Italian precedent as was deemed suited for its purpose, studied, however, with the same care and interest as marked the architect's treatment of more familiar modes."

Mr. Hadfield was joined in practice by his son, Mr. C. M. Hadfield, in the year 1897. He was much interested in the history of Sheffield, and had preserved accounts of easily-forgotten incidents. In religion a Roman Catholic, Mr. Hadfield was president of the local Committee of the Society of St. Vincent de Paul, and had been an active worker ever since the date of its establishment in Sheffield. Another institution with which he had long been associated was the St. John's Institution for the Deaf and Dumb at Boston Spa. He had held the position of treasurer and co-manager since the death of his father in 1885. Mr. Hadfield married in 1867 and left a family of two sons and three daughters.

THE HALL OF THE WORSHIPFUL COMPANY OF PAINTER-STAYNERS.

It is not an easy thing to make additions in a satisfactory manner to such ancient and old-world structures as are the halls of some of our City companies. On the one hand, it is a mistake to falsify the story that every ancient building tells of its history by a meticulous adherence to the style, tone, and material of the original so that a sham antique is produced, which may confuse even the elect; on the other hand, the new must not be so offensively and obtrusively modern that it clashes with and destroys the charm of the old.

Amongst the old City halls, that of the Worshipful Company of Painter-Stayners, the rebuilding of which after the Great Fire was commenced in 1668 and finished in 1669, does not pretend to vie in size or sumptuous architecture with those of some other companies, but, possessing its original seventeenth-century form and work, it with this rejoices in a charmingly modest but satisfying and homelike interior, enhanced by a notable collection of pictures.

The additions which have recently been made from the designs of Mr. H. D. Searles-Wood, a past Master of the company, have achieved that golden mean between the two extreme methods of treatment to which we have referred, which satisfies one's sense of congruity without effacement of a sufficient distinction between the old and the new.

The company is flourishing and increasing in membership; hence the necessity has arisen for a larger court-room and a larger hall. In adding to these principal apartments the architect has done so without destroying the character or injuring the lines of the originals, and has maintained harmony of feeling whilst not omitting to express a distinction between the original and the addition. A new and more commodious staircase is frankly modern in detail, though at the same time harmonious in feeling with the seventeenth-century work.

The efficiency of the new kitchen department, rendering the Company now independent of outside caterers, was effectively demonstrated at the luncheon given to celebrate the re-opening of the hall on Tuesday last, when the Lord Mayor and leading statesmen of the overseas Dominions of Australia and New Zealand were amongst the company presided over by the present Worshipful Master, Mr. John Jones, assisted by his Upper Warden, Mr. E. S. Theobald, and the Renter Warden, Mr. John Campbell Cooper.

HOUSING OF THE WORKING CLASSES, 1914-15.

The Local Government Board has just issued Part II. of their Forty-fourth Annual Report which relates to matters incidental to the administration of the Housing of the Working Classes Acts, 1890 to 1909, and of Part II. of the Housing, Town Planning, &c. Act, 1909, which deals with town-planning.

The report deals for the most part of the year ended on March 31, 1915, and naturally divides itself into two principal sections, namely, housing of the working classes and town-planning.

So far as the housing of the working classes is concerned the year is divided into two periods, viz., the period prior to the declaration of war and the period subsequent to that date. Up to the outbreak of the war the year had promised to be one of striking progress in regard to housing, and more particularly in regard to the actual provision by local authorities of houses for persons of the working classes.

The sum-total of the loans sanctioned during the year for this purpose under Part III. of the Housing of the Working Classes Act, 1890, was £1,125,176, of which £862,441 was sanctioned to urban authorities, and £262,735 to rural authorities, the bulk of this sum being sanctioned in the first half of the year. The total exceeds by £365,736, or nearly 50 per cent., the total sanctioned for the same purpose in the year 1913-14, which was itself far in advance of the amount sanctioned in any previous year, and the sum included in this total in respect of loans to rural authorities exceeds the previous highest record by £69,155, or nearly 36 per cent. Only £460,609, or little more than two-fifths of the total, was sanctioned in the latter half of the year, and of this sum only a very small proportion has been, or will be, allowed to be raised during the currency of the war.

Shortly after the outbreak of the war the Board issued a circular to local authorities urging them to prepare schemes for the provision of working-class dwellings in anticipation of possible unemployment. At the end of the year to which this report relates the Board had before them no less than sixty-six schemes for the provision of some 4,120 houses by urban authorities, and sixty-eight schemes for the provision of some 570 houses by rural authorities. These schemes involve a total expenditure of over £1,150,000, but in nearly every case further action has had to be deferred.

But while the war has, speaking generally, put a stop to activity on the part of local authorities in this direction, there are a few localities where it has had precisely the opposite effect, and where an urgent need for additional housing accommodation had had to be met owing to the extension of works engaged in the production of materials of war.

The Housing Act, 1914, and Housing (No. 2) Act, 1914, were passed as emergency measures after the outbreak of the war. The former Act empowered the Local Government Board, with the approval of the Treasury, to make arrangements with any authorised society for the provision of dwellings, &c., for persons employed by, or on behalf of, Government Departments on Government works where sufficient dwelling accommodation was not available. It also gave power to the Commissioners of Works to carry out schemes for the same purpose.

The second Act mentioned related to general housing purposes, and gave the Board of Agriculture and Fisheries in agricultural districts and the Local Government Board elsewhere wide powers to make arrange-

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ments for such purposes with local authorities or "authorised" societies, and to acquire land and erect dwellings in exceptional cases of proved need. The power of acquisition of land, however, was only exercisable during one year from the passing of the Act. The Act also empowered the Treasury to issue sums not exceeding £4,000,000 for the capital expenditure under the Act.

Since the passing of the Housing, Town Planning, &c. Act, 1909, there has been a very remarkable activity on the part of a large proportion of the local authorities in dealing with insanitary and defective houses, which in its turn has tended to some extent to cause owners of small property to take a more enlightened view of their responsibilities to their tenants. The striking effect of the passing of the Act may be gathered from a table in this report, which gives a comparison of figures as to action taken by local authorities with regard to houses unfit for human habitation during the four years subsequent to that in which the Act was passed with those for the corresponding period prior to that year. Here it may be stated, briefly, that the average number of dwelling houses made fit for human habitation on the initiative of local authorities or their officers under Part II. of the Act of 1890 was only 3,125 in the four years ended March 31, 1909, as compared with 13,712 in the last four years, and that during the period from the passing of the Act of 1909 (December 3, 1909) to March 31, 1914, no less than 133,479 houses were made fit for habitation at the cost of landlords or owners, after action by the local authorities under section 15 of the Act, quite apart from the large number dealt with under the Public Health Acts and under special powers contained in Local Acts.

It is recognised that in England and Wales private enterprise has always been, and, so far as can be foreseen, will continue to be the main source of the provision of houses for the working classes. It is only in those places where private enterprise has failed to provide such houses, or has failed to provide them for a certain class of workman, that the local authority is required to step in. Figures are not available to show the precise proportion of the new houses suitable for occupation by the working classes built in any one year by private enterprise and by local authorities respectively, but it may safely be asserted that, of the 5,652,096 dwelling-houses shown in the report of the Commissioners of Inland Revenue for 1913-14 as exempt from inhabited house duty, not more than 20,000 had been erected by local authorities under Part III. of the Act of 1890.

The fear has sometimes been expressed that any activity on the part of local authorities in the direction of house building would bring private enterprise to a standstill and that not only in the particular area in which such building took place. In view of the figures quoted above as indicating the relation between the number of houses provided by private enterprise and of those built by local authorities, apprehension lest private enterprise should be checked to any serious degree by the activities of local authorities can be readily understood. In actual fact, however, cases are not wanting to suggest that in some instances, at any rate, the reverse is the case. Thus the clerk to the rural district council at Atcham states in a letter: "Perhaps I may be permitted to add that the building of the six cottages at Cressage" (by the local authority under Part III. of the Act of 1890) "has had an unexpected result. Many of our large landlords had no idea that cottages could be built in this neighbourhood at so reasonable a figure, and they have borrowed our plans and are building by contract instead of by estate labour cottages exactly identical with those which we have erected at Cressage." In other instances the prospect of coming action in this direction by the local authority has had a stimulating influence upon private enterprise.

As already pointed out the war has necessitated the postponement of the provision of working class dwellings by local authorities. The shortage of labour, the increased cost of certain building materials, and the increasing difficulty of financing building operations have tended to restrict the building of such dwellings by private enterprise, and there can be no doubt that for some time to come we may have to look forward to an increased demand for dwellings of this class with very little addition to the supply.

YORK MINSTER WINDOW PROTECTION.

THE Dean of York, Rev. Arthur P. Purey-Cust, has issued the following communication concerning the proposed protection of the Minster's stained-glass windows in the event of Zeppelin bombs falling in the vicinity:

As regards the recommendation that the Minster doors should be opened in the event of any alarm of an attack on York by Zeppelins, that has been arranged with the police on day and night duty at the Minster, and is in harmony with the instructions given to the soldiers at "the Front," who, as shown by a cartoon in the "Illustrated War News" of this week, are ordered "Keep your mouths open" when the great guns are being fired and the shells bursting overhead. How far the opening of the doors of the Minster would, under like circumstances, have a similar effect on the building, remains to be proved. At any rate, it will cost nothing to try it.

But another expedient which has proved successful has been adopted, and will be extended as fast as our funds allow us to do so, viz., the protection of the windows with an outside covering of plate glass. This has been done some years ago to the west window, the east window, and the Five Sisters' window, but as much of the glass had become cracked and dilapidated it has been lately renewed throughout. The bell founders' window and all the windows in the chapter-house have been similarly treated during the last few years. And all this at considerable cost to the Dean and Chapter.

There remain, however, forty windows still unprotected, and the estimated cost of providing an outer covering of plate glass is £100 per window. That this is indeed effective has been lately proved at Hull, where "the Church of the Holy Trinity" being wrecked by explosive bombs, all the windows were smashed except one protected by plate glass, which is entirely uninjured.

There are, I know, innumerable appeals just now for contributions, and it is difficult to find men to do any work, but if your correspondents will testify to their zeal in behalf of the Minster windows by giving, or obtaining, substantial contributions for their protection, I will guarantee that this important and desirable result shall be carried out as fast as possible.

ART IN LONDON.

LITHOGRAPHS BY FANTIN-LATOUR.

"BY their fruits ye shall know them"; ay! but we have been wont to know M. Fantin-Latour by his flowers, and to know him was to love him. And yet we have no cause to complain that an exhibition of this artist's lithographs shows him to us in a light hitherto unsuspected by us and unwot of by the majority. Here we are in the presence of his homage to music and musicians, and the innate poetry of his nature is fully discovered.

Not that everything proves pleasing; at times not only was his technique coarse and laboured, but his treatment of the human form rendered it less than divine in appearance, though demanding the height and depth of idealism. In "A Stendhal" and "La Source dans les bois," the main figure monoplanes in each case with the background, and in sundry of the sketches the modelling is defective. "La Vérité" sits on the parapet of her well, exposing none too attractive a personality; but we cannot believe that the artist purposefully made her unattractive in appearance, as the sarcasm would be too biting.

But we are glad to dispose of adverse criticism, and to

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indulge our proclivities for an attitude of admiration. The artist was at home in good composition, the art of massing and of chiaroscuro. "La Liberté" and "Study for Eve" are two good examples of his work; the latter realises Milton's fine lines—

> Grace was in all her steps, Heaven in her eye,
> In every gesture, dignity and love.

The one flower-piece on exhibition is "Bouquet de Roses," a deliciously soft and sympathetic presentation of the poet's flower par excellence. "Ondine" seems, without a great stretch of imagination, to be materialising from the waves. Altogether it is an exhibition which appeals by reason not alone of the artistic qualities displayed, but also the conscientious detailing, which, though here and there falling into extravagance, was, as a rule, kept under control.

The Twenty-one Gallery in the Adelphi deserves well of the public for having brought together this collection of Henri Fantin's lithographs; 'tis a household name, is that of Fantin-Latour, for the artist is more popularly known by the combination of his patronymic and matronymic, though he signed his works more simply. The pity is that we have to refer to him in the past tense.

> **Adieu, Fantin! hommage vous on adresse**
> **Et à votre Art et à sa belle tendresse.**
> **V'là le soupir des gens; l'odeur des fleurs parcourt;**
> **Et avec cela on sent la poésie de l'Amour.**

THE TOWN-PLANNING PROPOSALS OF THE URBAN LAND REPORT.*

By H. R. ALDRIDGE, Secretary of the National Housing and Town Planning Council.

IN opening this discussion on the town-planning proposals of the Urban Land Report, it will be of service to give a short analysis of the proposals therein contained, and to give this analysis, as far as possible, in the actual words of this Report.

The case for action is thus stated (p. 149):—

"While it would be pessimistic to assume that the rate at which unbuilt-on areas are being protected, on the lines laid down by the Act of 1909, it will not increase progressively in the future, it is essential to a proper understanding of the situation clearly to grasp the fact that over the vast majority of urban areas the development of building estates continues on the old, unsatisfactory lines."

In anticipation of the question as to whether it is practicable or not to suggest that the benefits of town planning can be immediately extended and uncontrolled town development rendered impossible, it is stated in the Report that much attention has been given, by those responsible for the Report, to the question, and that an affirmative conclusion has been reached.

A distinction is, however, made between "simple and generally applicable" conditions which may be laid down in town-planning schemes, and those conditions which are more difficult and which can only be decided upon after careful consideration from many points of view and after prolonged negotiations between interested parties.

A definite policy is then outlined in the following words (p. 150):—

"We propose that every local authority shall be required to prepare, within a specified time, what we may term a preliminary scheme, by which the more simple conditions referred to above can be applied to the whole of its unbuilt-on areas. The following are some of the principal matters which should be dealt with in this preliminary scheme:—

"(1) The fixing of the maximum number of dwelling-houses which may be built per acre. Such general limitation might be adjusted in greater detail for the different areas if and when a complete planning scheme is subsequently adopted.

"(2) The fixing on all existing roads of such building lines as will reserve sufficient unbuilt-on width to meet any probable future widening required by the traffic.

"(3) Such modification of by-laws as to streets and buildings as will facilitate developments on the improved lines now generally recognised as desirable. (This matter is dealt with on pp. 143 and 147 of the Report.)

"(4) The securing of routes for any new main communication roads, whether local, regional, or national, the need for which is recognised.

"Each locality would have the opportunity of adapting the regulations to its own needs, and also of including other matters in its preliminary scheme, and no doubt some elasticity would be permitted by the Local Government Board, whose approval would still be necessary for all schemes. But the Board, before they could be enforced, would see that every scheme met certain minimum requirements.

"If any locality failed within the specified period to prepare a preliminary scheme, we suggest that the Local Government Board should have power to prepare and enforce one.

"The general obligation on all local authorities to prepare a preliminary scheme would render needless the somewhat dilatory and costly procedure of giving notice to every landowner affected that it is intended to apply for power to prepare a town plan. Owners would have sufficient notice through the passing of the Act and subsequent advertisements, just as they have when other general Acts come into force."

The rest of the chapter dealing with this subject is devoted to the consideration of:—

(1) The need for placing on all local authorities a general obligation to prepare preliminary schemes; and

(2) The practicability of the proposals made by the Committee.

The arguments adduced by the Committee are supported by figures and illustrated by diagrams. In these figures and diagrams Mr. Raymond Unwin has demonstrated, in his usual clear and lucid manner, two points of cardinal importance:—

(*a*) That the adoption of the proposals of the Committee need not be accompanied by any increase in the cost per house for roads and sewers; and

(*b*) That where landowners adopt the new methods of development the size of the garden plot attached to each house may be quadrupled with only a small increase in the rent per house.

In an appendix the simple conditions which it is proposed shall be secured by the preparation of preliminary town-planning schemes are thus defined:—

(1) The protection of the whole country from the continuance of building in an overcrowded manner.

(2) The securing by regulations of such modifications in by-laws as to streets and buildings as will facilitate development on the improved lines now generally recognised as desirable.

(3) The fixing of such building lines on existing roads as will reserve sufficient width from being built over to meet any probable future widening required for increased traffic.

(4) The securing of routes for any main communication roads, either local, regional, or national, the need for which is recognised.

I come now to the consideration of the two main propositions put forward by the Committee, viz.:—

(1) That some measure of town-planning control should be exercised in every urban district in which growth is taking place; and

(2) That it is possible to devise a simple form of town planning which can be applied in every urban district in which such growth is taking place.

I will devote the whole of the time at my disposal to the consideration of the first proposition of the Committee—viz., that some measure of town-planning con-

* A Paper read before the Town Planning Institute.

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trol should be exercised in every urban district in which growth is taking place—in other words, that town planning should be made obligatory.

Now I have often thought that we need to discriminate between the values of various municipal services, and to grade them in accordance with their importance to the community—as vital services, economic services, and amenity services.

The first grade will include all those municipal services which relate to the health or safety of the members of the community—e.g., the services under the control of Health Departments, of Sanitary Departments, of Water Departments, and of Watch Committees controlling the Police Force.

The second grade will include those services which add to the efficiency of the industrial units in the community—e.g., the services devoted to the provision of power in the form of supplies of gas and electricity—and, in some measure, services devoted to the provision of means of transit by workmen's trams.

The third grade will include those services which add to the comfort or amenity of the community—e.g., the services rendered by municipal libraries, by parks and playgrounds, and services of trams and 'buses for the purposes of pleasure or recreation.

It is interesting, as showing the great importance of town-planning control, to note that a town-planning scheme may be made to serve all these purposes—viz., the greater health and safety of the community, the industrial efficiency of the community, and the amenity of the community. In other words, a community may be made healthier, safer, industrially more efficient, and happier as a result of the preparation of, and the carrying into effect of, town-planning schemes.

Following the familiar methods of the logician, we may, in stating our syllogism relative to obligatory town planning, take as the major premise the proposition:—

That it is the duty of the State to strive to secure that the members of the community shall live under conditions of health, safety, efficiency, and amenity. To this we are all bound to give our assent.

Then our minor premise will be:—

That experience has shown that these conditions cannot be secured in full measure unless wise foresight is shown in controlling city and village growth and unless definite plans shaping this growth are prepared and carried into effect. To this also we, as town planners, can give willing assent.

Let us now proceed to our deduction.

If it be true that it is the duty of the State to strive to secure that the members of the community shall live under conditions of health, safety, industrial efficiency, and amenity, and if it be also true that these conditions cannot be secured in full measure unless wise foresight is shown in controlling city and village growth, and unless definite plans shaping this growth are prepared and carried into effect, then our deduction is clear—viz., that the State should, either by the persuasion or by compulsion of local authorities, take steps to secure that they (the local authorities) shall prepare and carry into effect town-planning schemes.

To this deduction there are two objections which may be raised. They are:—

(*a*) That the State has not the power to compel local authorities to perform this task; and

(*b*) That if this work is done other evils may be intensified, and in the final result the community will lose and not gain.

I would, however, point out that when we say that it is the duty of the State to perform a certain task we have already decided that the power to perform it is present. If we have no power to take a certain course of action it is quite clear that the taking of this line of action cannot come to us as a duty. But we all realise that if Parliament decided that the step should be taken it is within the power of the State to make town planning compulsory. The State could call on every local authority in the kingdom to prepare a town-planning scheme, and not run any risk that local authorities would defy the mandate of Parliament.

If Parliament, for example, were to-morrow to call upon the local authorities in the South Yorkshire coal-field area to co-operate in the preparation of a town-planning scheme for the whole of their area there would not be any standard of revolt raised against the authority of the State.

The other objection—viz., that if this work is done other evils may be intensified, and in the final result the community will lose and not gain—cannot be sustained. Experience shows that wherever care has been exercised in regard to the planning of towns the results to the community have been on the whole better than in those cases in which no town-planning care has been exercised. (The examples which spring to one's mind at once are those of the new town at Edinburgh as compared with old Edinburgh, and the London Squares as compared with, say, Walworth or Mile End.

Let me now repeat yet again in formal and logical terms the argument in favour of the proposal that town planning shall be made obligatory: (1) That it is the duty of the State to strive to secure that the members of the community shall live under conditions of health, safety, efficiency, and amenity; (2) that experience has shown that these conditions cannot be secured in full measure unless wise foresight is shown in controlling city and village growth, and unless definite plans shaping this growth are prepared and carried into effect; and (3) that, if it be true that it is the duty of the State to strive to secure that the members of the community shall live under conditions of health, safety, efficiency, and amenity, and if it be also true that experience has shown that these conditions cannot be secured in full measure unless wise foresight is shown in controlling city and village growth, and unless definite plans shaping this growth are prepared and carried into effect, then we must unequivocally agree that the State should, either by the persuasion or by compulsion of local authorities, take steps to secure that they (the local authorities) shall prepare and carry into effect town-planning schemes.

But although those who delight in clear reasoning may come quickly and surely to this conclusion, there are many estimable and able members of the community who prefer to arrive at their conclusion in less scientific ways. It will therefore be of service to pass in review the general arguments for and against obligatory town planning.

Taking first in order the arguments against the proposition, these would seem to be as follows:—

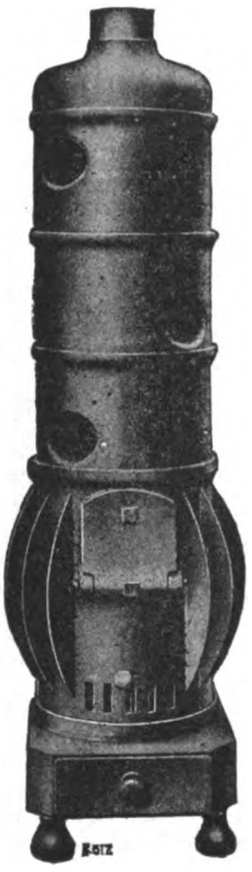
(1) Town planning should not be made obligatory throughout the United Kingdom until more experience has been gained in regard to the standards to be adopted in the preparation of schemes.

(2) If town planning is made obligatory it will be difficult to find a sufficient number of skilled town planners to do the work, and, as a result, the schemes, when made, will be poor in character.

(3) It will be best for local authorities to discover gradually the advantages of town planning and then to act in regard to their town-planning powers as they have acted in regard to other adoptive powers, such as the powers to provide gas, electric light, trams, and libraries, &c.

Taking first in order the argument that town planning should not be made obligatory throughout the kingdom until more experience has been gained in regard to the standards to be adopted in the preparation of schemes, it may be at once recognised that Parliament in 1909 took a wise course in determining that these new town-planning powers should be permissive. In arriving at this decision the Standing Committee of the House of Commons was almost unanimous, and the reasons for their decision were simple and clear. A veritable "leap in the dark" was to be taken. A kingdom which had no experience of town planning in the modern sense was

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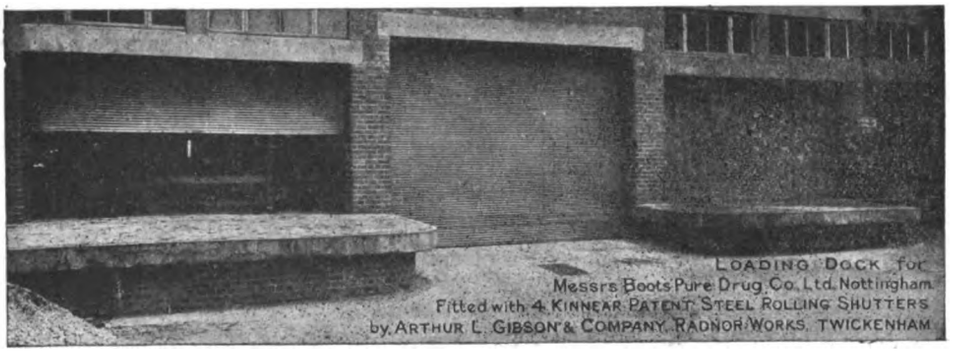
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placing in the hands of local authorities power to impose conditions as to land and estate development on builders and owners of land in the most individualistic country in the world.

But six clear years have passed since the Act embodying these town-planning powers was placed upon the Statute-book, and thanks to the energy and skill of the members and officers of the Birmingham City Council—an authority governing an area with a population of over 1,000,000 people—and of the Ruislip-Northwood Urban District Council—with a large semi-rural area under its control—an exhaustive series of town-planning clauses have been drafted, invaluable precedents have been set, and, what is of even greater importance, such a measure of agreement with landowners and builders has been reached as to demonstrate that town planning may be made to render service to all sections of the community.

In other words, the value of the new powers has been clearly demonstrated, and Parliament can now, with absolute confidence as to the wisdom of the step they are taking, call upon all local authorities to accept the preparation of town-planning schemes as a new municipal duty.

I come next to the argument that if town planning is made obligatory it will be difficult to find a sufficient number of skilled town planners to do the work.

It may be admitted that in making the preparation of town-planning schemes obligatory on local authorities we shall run the risk of seeing some schemes passed which will be poor in quality. Now the person who jumps from a burning building into the sheet held by firemen may suffer injury, but it is, nevertheless, better for him to run this risk than to stay in the burning building. Similarly, when the preparation of town-planning schemes is made obligatory upon local authorities we may witness the production of a number of plans of little or no value, but even then these plans will produce better conditions than those which do arise when no plans are prepared at all. Poor planning is better than no planning.

But this argument is not only invalid on the ground that it exaggerates the importance of what I may call the "special ability factor." It is invalid also because it ignores the truth that the best method of securing a supply of good town planners is to make a demand for their services. We have, happily, several able, technical experts eager and willing by tongue, pencil, and pen to spread knowledge in regard to the art and practice of town planning, and their influence will be of very great service in producing good town planners.

Moreover, there will be no poor planning if we place before local authorities high standards of town-planning achievement to be copied, and more especially if we support the Local Government Board and the officers of the Board in the exercise of the invaluable power possessed by the Board to require the submission of draft plans and to reject these draft plans unless they are amended to meet the requirements of the Board.

I come now to the argument that it will be best for local authorities to discover gradually the advantages of their town-planning powers and then to act voluntarily, just as they have acted in regard to other adoptive powers.

This is the most powerful argument which can be brought forward against the proposition that town planning shall be made obligatory on local authorities.

We all recognise that many of our municipal services are effective because they have been undertaken voluntarily. Councillors have taken up the work because they believe in it, and in many cases, before the establishment of the services, these councillors convinced themselves and their colleagues that great public good would follow the establishment of such services. The establishment of such services is in effect due to the advocacy of wise enthusiasts, and these have first of all fought for the recognition of the value of a line of action suggested by them. They have then realised that the best way to show that their judgment has been good has been to devote business ability and good judgment to the work of administration.

A clear distinction must, however, be made between the history of the establishment of such remunerative municipal services as those of gas supply, electric light and power supply, and tramways, and of unremunerative services such as, for example, those of health and sanitary administration.

Many municipal services have been established by local authorities because the members realise that if they do not take municipal action valuable monopolies will be secured by groups of private persons. There is money to be made in electric light, in gas supply, and in tramway supply, and as experience has shown that the possession of these municipal services can be used to secure revenue to be used in the reduction of rates, the great desire of local authorities to secure municipal control of these remunerative services can be easily understood.

But when we come to non-remunerative services—I mean non-remunerative in the narrow sense—we all realise that progress is by no means so general. The action of local authorities in regard to these services often shows as much real enthusiasm for action as the boy who creeps unwillingly to school shows for educational development.

We cannot, indeed, take a better example than that of education. Is it not true to state that if the development of educational facilities had been left to local authorities without compulsion from the centre we should at this moment have had almost as great a disorder in our educational methods as we have in our methods of town development?

Now what is true of education is true of other vital services. The process of evolution from the permissive stage to the compulsory stage is the same in all these non-remunerative services. A few enterprising and progressive municipalities, in their zeal for the good government of their towns, use the powers possessed by them, but the great mass of other local authorities are, for various reasons, indifferent to the value of the example.

Then other local authorities slowly follow the example.

At a later stage a Parliamentary agitation is set on foot, a Bill is introduced, and the powers are transformed into duties, and all local authorities are required to fulfil them.

But there is no need for us to wait for long periods to elapse in the history of this movement for making town planning obligatory. We shall, in urging our case, be "pushing an open door."

During the past fifty years the Houses of Parliament and the administrative officers of the nation have learned many valuable lessons in regard to questions of local government and not the least valuable of these lessons is that when services are of vital importance to the nation as a whole, and when the neglect of these services is found to act prejudicially to the national well-being, then these services must be removed from the category of permissive services and made obligatory on all local authorities.

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Amersham.—Two houses, Lexham Gardens, for Mr. A. Woodley.

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HAMPSHIRE.

Bournemouth.—Royal National Sanatorium: tuberculosis dispensary.

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KENT.

Faversham.—No. 34 East Street: alterations for a motor garage, for Mr. J. W. Wood.

Harrietsham.—Bakery, cottage, saw-mill, &c., for Mr. Drageas.

Headcorn.—Bungalow, for Mr. J. H. Gibson.

Herne Bay.—"San Remo," St. George's Parade: additions and alterations, for Mr. J. Huxtable.

LANCASHIRE.

Golborne.—Proposed Catholic Church.

Manchester.—Temporary Reference Library, Portland Street: enlargement (£800).

Warrington.—Proposed P.M. Church and Schools, Legh Street.

LINCOLNSHIRE.

Welton.—Two cottages, for Messrs. J. Lancaster & Son.

STAFFORDSHIRE.

Glascote.—Two houses, Bamford Street. Mr. A. W. Mainprize, builder.

House, Thomas Street. Mr. C. Shuttleworth, builder.

Glascote Heath.—House, for Mr. J. T. Spooner.

SURREY.

Barnes.—Mortlake Brewery: additions to finings house and malt elevators, for Messrs. Watney, Combe, Reid & Co.

Garage, No. 31 Coval Road, for Messrs. Cox & Taylor.

House, Richard Park Road, for Mr. W. A. Lane.

SUSSEX.

Horsham.—House, Brighton Road. Messrs. H. Lindfield & Son, builders, 42 Brighton Road.

WARWICKSHIRE.

Coventry.—Offices and Works: extensions, for the Albion Drop Forgings Company, Ltd.

WORCESTERSHIRE.

Bromsgrove.—Infants' Council School: additions and alterations.

Redditch.—Cookery and handicrafts Centre (£1,800).

YORKSHIRE.

Hebden Bridge.—Birchcliffe Baptist Chapel: school.

Heckmondwike.—Warehouse, Cook Lane, for Mr. H. Spivey.

Linthwaite.—Warehouse, Manchester Road, for Messrs. G. Cock, Ltd.

Scotton.—Cinema Hall, for Mr. Haswell (of Darlington).

WALES.

Barry.—Works, for Messrs. Elliot & Jeffery.

Langland (Oystermouth).—The Osborne Hotel: addition, for Mr. W. J. Rees.

SCOTLAND.

Aberdeen.—Factory, North Esplanade and Russell Road: additions and alterations. Mr. G. B. Mitchell, architect, 148 Union Street.

Home for soldiers and sailors, College Street: addition. Mr. J. Rust, architect, 224 Union Street.

Six houses, Ashley Gardens and Brighton Place. Messrs. D. & J. R. McMillan, F.R.I.B.A., architects, 105 Crown Street.

No. 60 Union Row: additions and alterations. Messrs. Wilsons & Walker, AA.R.I.B.A., architects, 375 Union Street.

Polishing Mill, &c., Merkland Road East. Mr. G. Watt, architect.

Offices and stores, Commercial Road. Mr. J. Cameron, architect.

No. 55 Blenheim Place: additions and alterations. Mr. R. R. Gall, architect.

No. 80 Spring Gardens: store, for Messrs. W. McKinnon & Co., Ltd.

Buckie.—No. 28 Land Street: alterations, for Mr. J. Hepburn.

Office, Ianstown slipway, for Messrs. J. Jones & Sons.

Dundee.—Garage, &c., Panmure Terrace, Barnhill, for Mr. J. Fearns.

Office, Overgate: addition, for Messrs. Kirk & Coutts.

Glasgow.—Factory, Cogan Street, Pollokshaws, for Messrs. Gibson Bros. & Co.

No. 142 North Woodside Road: extension, for Messrs. R. S. McColl, Ltd.

No. 417 Sauchiehall Street: alterations, for De Luxe Picture House, Ltd.

Engineering shop, Charles Street, St. Rollox: extensions, for Messrs. T. Melvin & Sons, Ltd.

IRELAND.

Belfast.—Avoncil distillery. Messrs. Watt, Tullock & Fitzsimons, FF.R.I.B.A., architects, 11 Wellington Place.

Buildings, Clarendon Graving Dock, for Messrs. Workman, Clark & Co., Ltd.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 3,193. Feb. 27, 1915.—James Cornes and Cornes & Haighton, 240 High Holborn, W.C. Combination ranges, coppers, and baths.

3,236. March 1, 1915.—Lister Lister-Kaye, Southam Cement Works, Southam, near Rugby. Rotary cement furnaces and the like.

3,070 and 3,071. Feb. 25, 1915.—H. V. R. Read, 109 Victoria Street, S.W., and H. R. Campbell, Angel Road, Edmonton. Apparatus for ejecting liquid for fire extinguishing and like purposes.

4,886. March 30, 1915.—A. S. Rogers, 5 Noel Street, Notts. Clamping device for holding timber on a carpenter's bench or the like.

5,176. April 6, 1915.—Thos. West, 69 Kilravock Street, Queen's Park Estate, Paddington, W. Hangers for casement windows.

5,187. April 6, 1915.—August Danielsson, 26 Grafton Square, Old Town, Clapham Common, S.W. Devices for drawing parallel lines.

5,329. April 9, 1915.—Robert Hutsel, St. Heliers, The Park, Kingston-upon-Hull. Adjustable radiator wall bracket and pipe bracket.

6,950. May 10, 1915.—W. H. Smith, 193 Cheltenham Road, Bristol, and E. G. Knapman, 40 Newfoundland Street, Bristol. Ladders.

7,445. May 18, 1915.—James Spelman, 189 St. James Street, Montreal. Concrete substructure caissons.

7,746. May 25, 1915.—G. B. R. Pimm, 3 Hill Crest, Mannamead, Plymouth. Mathematical drawing appliance for describing curves.

9,072. June 21, 1915.—H. S. Valentine, 91 Fotheringay Road, Maxwell Park, Glasgow, South Side. Stand or supports for gas fires.

15,195. Oct. 27, 1915.—M. I. Poznanski, Hotel National, Quai du Leman, Geneva. Process for the manufacture of artificial stone slabs.

17,440. Dec. 13, 1915.—M. O. Spicknall, 9 Cloak Lane, London. Slide rules.

17,824. Dec. 21, 1915.—Robert Jarvie, 163 Hope Street, Glasgow. Fire extinguisher apparatus.

3,605. March 6, 1915.—John Spencer, Ltd., T. H. Spencer, and H. S. Smallmann, Globe Tube Works, Wednesbury, Staffs. Pipe and like joints.

4,366. March 19, 1915.—R. F. Carey, 6 The Broadway, Leigh-on-Sea, Essex; L. W. Sims, 16 Eddystone Road, Crofton Park, S.E.; and Waygood-Otis, Ltd., Falmouth Road, Great Dover Street, S.E. Vacuum-cleaning systems.

5,419. April 10, 1915.—Valentine Wright, Carr Road, Deepcar. Brickmoulds.

7,995. May 29, 1915.—William Beattie, 8 Lower Grosvenor Place, Westminster, S.W. Disposal of sewage.

8,960. June 17, 1915.—F. J. Turner, Newtown, Sidmouth, Devon. Casement hinges.

6,714. May 5, 1915.—William Henderson, Yew Tree Cottage, Sandwich, Kent. Lock.

7,134. May 12, 1915.—Mrs. Sarah Lamb, 203 Gibbet Street, Halifax, Yorks. Protectors for boiler flues and the like, household and otherwise.

11,638. Aug. 12, 1915.—Frank Briggs, 36 Beauchamp Street, Ashton-under-Lyne. Domestic boilers for heating bath water.

11,878. Aug. 17, 1915.—Luigi Sarzotto, Viale Lodovica 34, Milan. Portable pavilions.

14,080. Oct. 5, 1915.—J. D. Jackson, 197 Hay Street, Sydney, N.S.W. Continuous flow water heater, principally for domestic purposes.

17,622. June 16, 1915.—H. A. Humphrey, 38 Victoria Street, S.W., and W. J. Rusdell, 45 Waterloo Road, Wolverhampton. Valves for pumps for liquids (such as sewage, for example).

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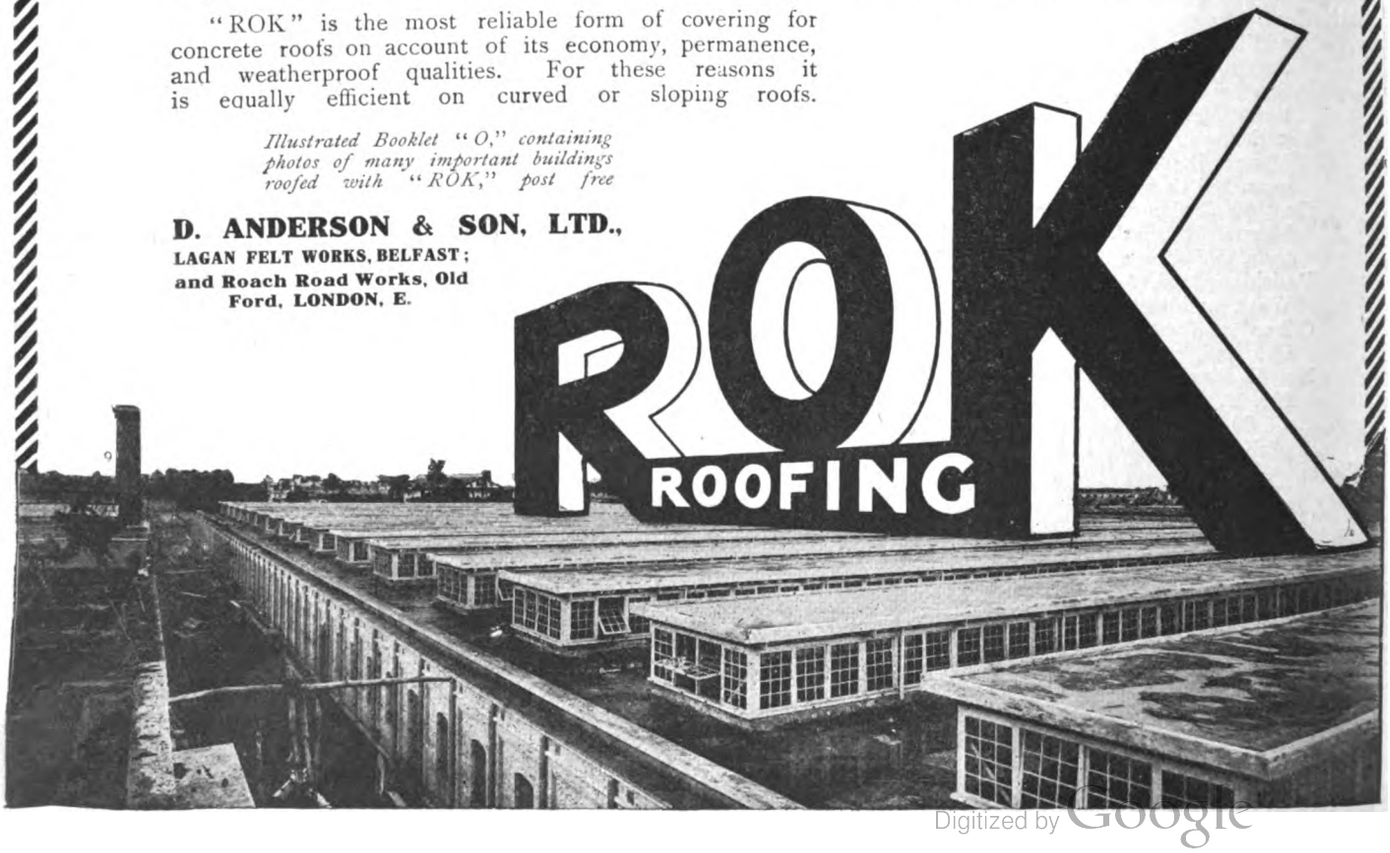
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THE ARCHITECT

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FORTHCOMING EVENTS.

Friday, April 7.

Institution of Municipal and County Engineers: Meeting at Great Yarmouth (two days).

Monday, April 10.

Surveyors' Institution: Paper entitled "The Principles of Town Planning," by Mr. W. R. Davidge, F.S.I., A.R.I.B.A., A.M.Inst.C.E., at 5 P.M.

Tuesday, April 11.

National Housing and Town-Planning Council: Congress on House Problems after the War, Caxton Hall, Westminster (four days).

Wednesday, April 12.

Edinburgh Architectural Association: Annual General Meeting at 117 George Street, at 8 P.M.

Friday, April 14.

Town-Planning Institute: Paper entitled "Horizontality and Verticality in the Architectural Treatment of Town-Planning Schemes," by Mr. Barry Parker, F.R.I.B.A., at 6 P.M.

THE RELATION OF SCULPTURE TO ARCHITECTURE.

ONE of the most satisfactory indications of vitality in our modern architecture is the increasing frequency of employment of sculpture as a component of the design of our buildings, even in those that are regulated in their cost of construction by the necessity of paying a dividend. At the present day it is not merely our public buildings, our palaces, our churches, our museums that we see adorned by sculpture, but our office buildings and other commercial structures, the architects of which do not hesitate to add by the cost of sculpture to the ground rent and capital expenditure on which a return has to be obtained. In the ultimate consideration this means that the public, who pay the rents, are willing to pay the necessarily higher rent that is required to defray the cost and yield a percentage of profit on the increased expenditure.

We are still, however, in this country, in the unfortunate position that the sculpture and the architecture of our buildings are, too often, not closely co-ordinated and integral components of the design, but stand in the relation of distinct entities, of which the one is applied to the other as decoration or ornament. We are still far from attaining the level of Pheidias and the French figure carvers of the thirteenth century, whose sculpture was as essentially part of the buildings on which it appeared as the mouldings and purely architectural forms.

The reason for our present failure to attain this level is, undoubtedly, due to the divorce between architecture and sculpture which has come about, so that they are regarded and practised as separate arts, rather than branches of one art. It is, possibly, vain to hope that we may revert to the conditions of artistic life in Greece, in thirteenth-century France, in Italy of the Renaissance era, when sculptor and architect were one and the same individual. Our only hope now lies in a more intimate association in their early training, as in their mature life, of art students who specialise in one or other branches, and in a more extended study of art in all its forms by every student and practitioner. No longer must architecture, sculpture, and painting be locked up in water-tight compartments, but some knowledge of all must be imparted to and acquired by the workers in each.

Every embryo architect should be trained to understand the language of sculpture and of painting, although he may not be able to express himself with freedom and facility in their peculiar idiom. So, too, the sculptor should learn so much of architecture as may enable him to execute his own work in consonance and harmony with the building of which his productions will form a part.

The effect of a building or a monument upon the beholder—and we are speaking now of the Philistine, of the man who does not understand or comprehend the technique of the art upon which he looks—depends primarily upon the harmony of its constituent parts. Just as there are thousands who, without any skilled knowledge of music, receive in their enjoyment of a well-composed and well-played piece a shock from an accidental error of the executant or an unresolved ninth of the composer, so the ordinary layman, in his contemplation of a building, will, without comprehending the reason, experience a feeling of uneasiness when architecture and sculpture are discordant.

We, who are practitioners of art, in our criticism of work before us, whether silent or expressed, are prone to analyse the technical faults, whether of design or execution, of that which displeases us, so that we are apt to ignore the standpoint of those who cannot follow us in our perception of technical deficiencies and to assume the incompetence of the Philistine, who can give no other reason for his pleasure or displeasure than "I know what I like." But if there is any reality in art expression at all it must affect the unlearned as well as the cognoscenti. Hence, if plastic forms are in future to be allowed, by those who pay, as part of the detail of buildings, it is of vital importance that architecture and sculpture should be harmonious.

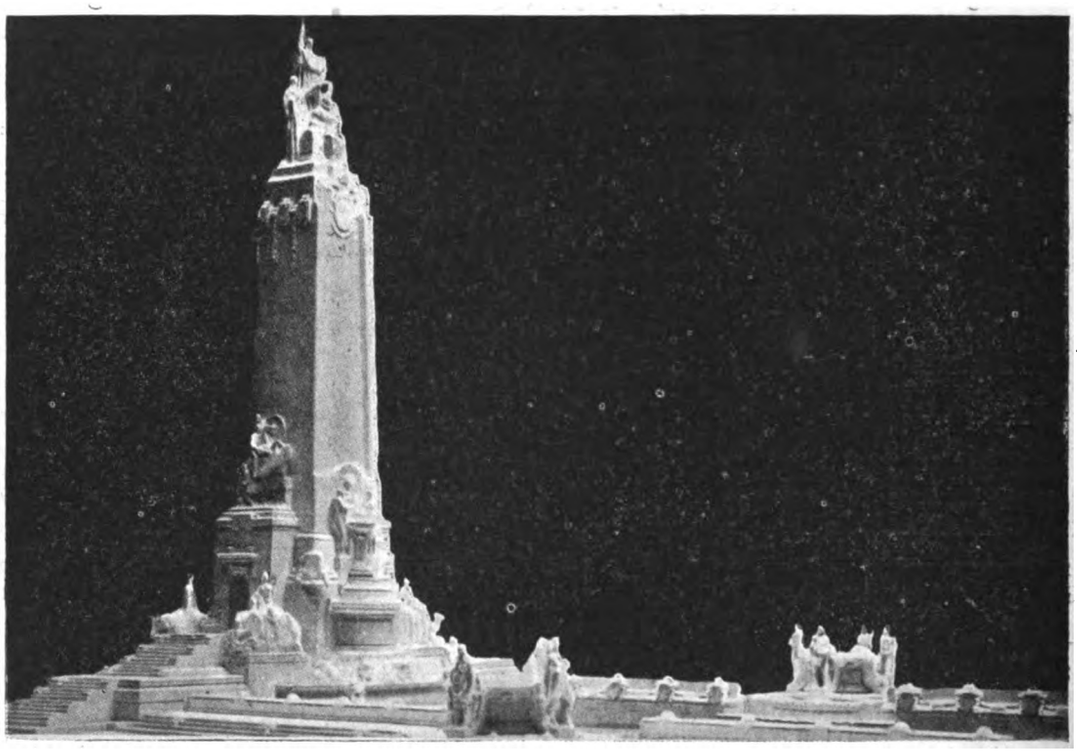
Although it may, at first sight, appear that there is a difference in essence between the sculpture of those structures of which it is the predominant part, as in what we ordinarily call monuments, and that which forms the decoration or ornament of a building, yet in each class it is equally important that both architecture and sculpture should speak in the same key. On the one hand, the dominant sculpturesque forms should not be considered all-important, and the architectural details of the pedestal or other support a matter of complete indifference; and, on the other hand, a building should not be regarded as a mere frame of which certain spaces are to be occupied by sculpture that may take any form that its creator pleases so long as it adequately fills the space allotted to it.

There may well be some difference in the treatment of sculpture which forms, as it were, an integral part of a building, as, for example, a keystone, a spandril, or a panel in a wall surface, and that which may be regarded as applied decoration, such as crowning figures upon a sky-line or detached groups of figures, supported by structural features or with the architecture as a background.

It is perhaps in the use of sculpture as what we have termed applied decoration that dissonance with the associated architecture is most prevalent. The sculptor seems to feel that he is more free to do as he pleases when his work is no longer rigidly framed by the lines of architectural forms, but, in a sense, is detached and stands alone. The most glaring defect that is apt to

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MODERN EUROPEAN ARCHITECTURE.



[From *Arquitectura y Construccion.*

SELECTED COMPETITION DESIGN FOR A MONUMENT TO CERVANTES AT MADRID.—DON TEODORO ANASAGASTI, Architect. DON MATEO INURRIA, Sculptor.

develop is want of scale. The plastic forms are often too large or too small for their supporting architectural features, most usually the latter. Giant orders are crowned by exiguous single figures, whose actual as well as expressive burden is a mere featherweight compared to the structural load which similar components of the architecture support.

We venture to think that it is at least questionable whether a single figure should ever be the crowning load of a single column with its entablature. The lines of the column dictate the extreme breadth of the figure and its accessories, whilst the lines of the entablature connecting with the walls of the building emphasise and to some extent exaggerate the supporting power. Hence, too frequently, the load is disproportionate to the support. This view is in no way at variance with the use of a columnar form as a support to a figure in an isolated monument, in all the successful examples of which the entablature is absent.

The other faults to which sculpture as applied decoration is most liable are incongruity of expression, as between delicacy and force, and harsh clashing of line. The latter is especially probable if the sculpture is far detached from the main structure, so that other parts besides those immediately connected are conjoined in the view. The finest examples of harmony of line between sculpture and architecture that the world has seen are probably to be found in the thirteenth-century cathedrals of France, and these should be the subject of study by every sculptor who purposes the exercise of his craft in connection with architecture.

An interesting volume* on the relation of sculpture to architecture, marked on the whole by a well-reasoned criticism, has just been published from the pen of Mr. T. P. Bennett, and is well worthy of perusal by all architects and sculptors who hope or intend to work in collaboration. We are especially in accord with the author's views expressed in his chapter on "The Small Monument," and particularly with his treatment of the conjoint use of bronze and stone. We are inclined to go so far as to doubt the advisability of such conjoint use at all, at any rate for monuments exposed to the climatic conditions of our country in out-door situations. The continually changing colour of the bronze and the disfiguring stains which it too often produces on the stone are destructive of all maintenance of the artist's original conception. Mr. Bennett's book is very fully illustrated, mainly by photographs, which, if somewhat small in size, are sufficiently clear and distinct to allow one to follow the author's treatment of his subject. In his preface the author acknowledges the assistance of his publishers in doing their utmost in every way to meet his views with regard to the details of production. We trust that these views have not extended to such eccentricities of spelling as Phidias, Erectheion, Logetta, Shinkel, which are unnecessary blemishes upon a production of the Cambridge University Press.

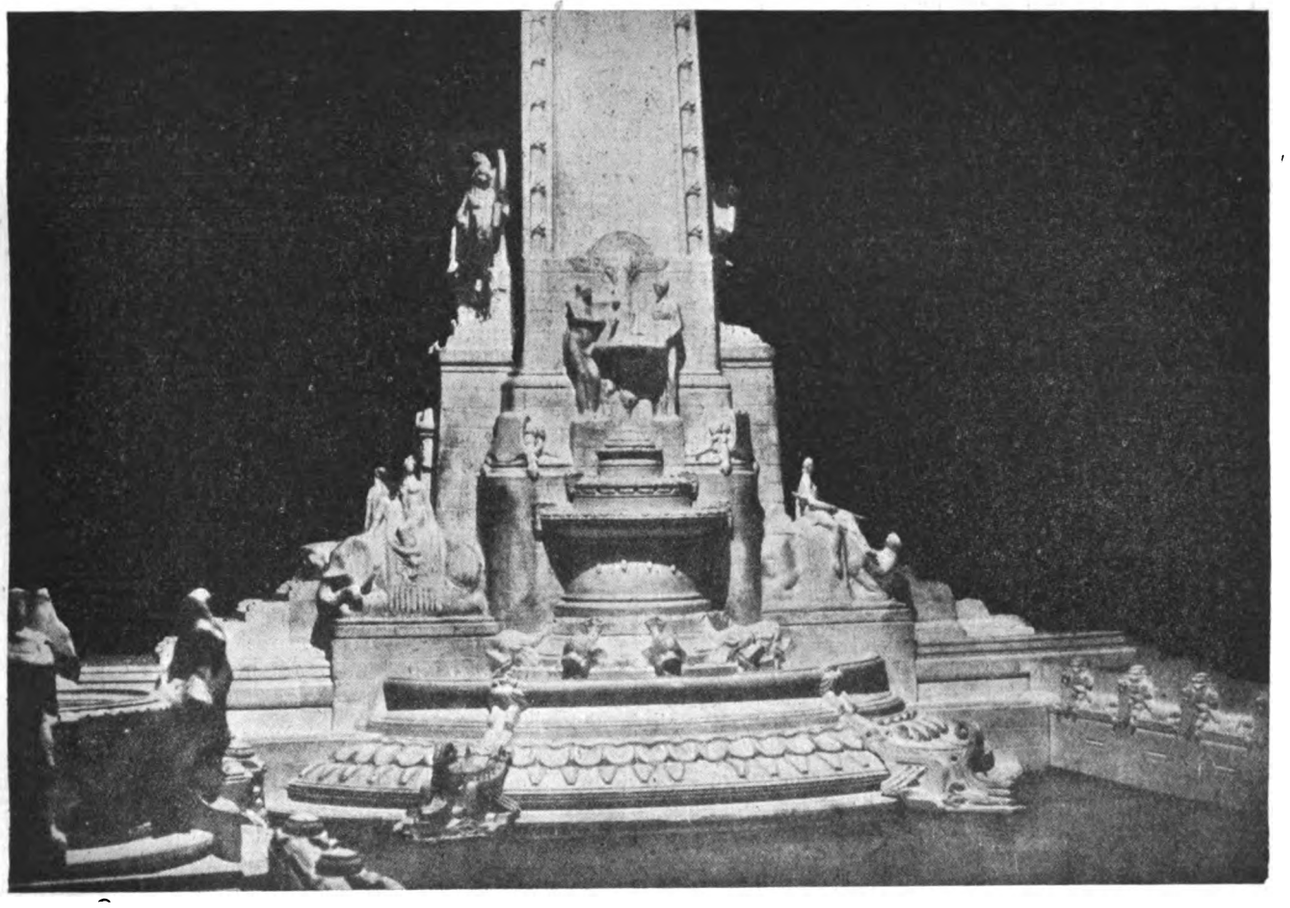
* "The Relation of Sculpture to Architecture." By T. P. Bennett, A.R.I.B.A. (Cambridge: at the University Press. 15*s.* net.)

NOTES AND COMMENTS.

THE Austrians are evidently intending, if they can, to drop bombs on the Campanile of St. Mark, and, following the usual mendacious methods of their masters before committing some new diabolical outrage to shock humanity, two of the leading Vienna newspapers have stated that the Campanile was used as a place for observation and that anti-aircraft guns were mounted on it. The assertion was made on the authority of Austrian aviators who had flown over the Piazza of St. Mark, and who said that they had seen the guns. The Campanile consists of four parts, the shaft of brick 160 feet in height, the bell-chamber and the *attica* of stone, adding another 60 feet to it, and then the tall graceful spire of steel and cement, surmounted by the gilded angel, bringing the total height to 325 feet. There is no possibility of mounting guns on the apex of the spire. The only place for that would be the bell-chamber halfway up the Campanile, and even there it would be difficult owing to the limited space, and, in any case, it would be impossible for an aviator or anyone else outside the Campanile to

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[From *Arquitectura y Construccion.*

DETAIL OF PRINCIPAL FOUNTAIN IN MONUMENT TO CERVANTES.—Don Teodoro Anasagasti, Architect.
Don Mateo Inurria, Sculptor.



[From *Arquitectura y Construccion.*

DETAIL OF CASCADE FOUNTAIN IN MONUMENT TO CERVANTES.—Don Teodoro Anasagasti, Architect.
Don Mateo Inurria, Sculptor..

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see them, as the bell-chamber is completely boarded up on all sides. Strong, stout planks, reaching from its balustrade to the *attica* above, hermetically seal it up. The falsehood has been officially denied by the Syndic of Venice, Count Grimani, and by the Patriarch, Monsignore Lafontaine, and steps have also been taken to induce the Pope and neutral Powers to use their influence with the Austrian Emperor in order that the attempt at the destruction of the Campanile, and probably also of St. Mark's, may be averted.

Mr. Harcourt scored a dialectic victory—which seems the only kind of victory our present Government is really in earnest about—in the House of Commons by quoting M. Rodin as having selected the site and determined the height of the pedestal upon which his bronze group, "The Burghers of Calais," is placed, but many competent critics are rightly asking whether M. Rodin has seen his gift to the English nation in its present position, as it is scarcely possible that he would be satisfied with the result.

It is gratifying to learn, for more reasons than one, that the Leeds School of Art is directing the attention of its students to the artistic design of dolls. Prizes are being offered for the best models and designs of dolls' heads. As is well known, porcelain dolls' heads have been imported from Germany in huge quantities in the past, and a similar class of goods has, since the outbreak of war, been made at Staffordshire potteries. The home production, however, leaves something to be desired on the score of daintiness and general attractiveness, as well as for the lack of the balanced eyes which enable the juvenile possessor to put her dolly to sleep. What is particularly important in the first instance, it appears, is a thoroughly good model, and on this desideratum the artistic aims of the school are to be concentrated, it being felt also that such designs and models as will enable manufacturers to compete successfully with Germany should be well worth paying a good price for. As to the possibilities which may follow successful achievement in this direction, much depends on local commercial spirit and on the readiness of those who have the facilities to engage in the research necessary to the production of a satisfactorily finished article. One essential is the quality of glaze and colour, and another is the manipulation of the balanced eyes, which, by the way, it is suggested, might provide employment for many young people. A report on the School of Art's operations is to be made in due course.

Whilst it is natural to feel regret that the bequest of the late Mr. John Lindsay of the residue of his estate, amounting to some £1,400, for the erection of a statue to William Wallace in Glasgow has been set aside by the judgment of Lord Hunter, in the Court of Session, the decision, under the circumstances, is scarcely open to objection. The amount, it appears, is insufficient to provide for the cost of the statue and its maintenance, even if a site were obtained for nothing, and the Corporation of Glasgow can scarcely be blamed for not establishing a precedent by accepting the cost of the upkeep of any monument any individual may choose to offer.

Suggestions for war memorials are likely to be numerous, some original, some ridiculous, but there is certainly something to be said in favour of that by "The Spectator" of a wide memorial road which should be laid out in the no-man's-land, the dead ground, between the two trench lines in France and Flanders, and should run from Nieuport to Basle, from the sea to the Alps—a great road with monuments to the fallen, and to the deeds of heroism done by this or that individual company, regiment, brigade, division, and army, scattered along it, and marked also with chronological and geographical records of the war. The kilometre stones should bear on the reverse some such simple legend as that "This sector of the line" was held during such-and-such dates by such-and-such a force, and later by whatever force took over that particular area.

The new road would sweep in gentle curves between the grim ruin of the trench lines. No attempt should be made to obliterate or keep in repair the ditches and parapets. Let Nature do her beneficent work here, and let the winds and the rains renew the bloodstained earth. All that should be done to the trench line would be to plant it on either hand with the stately poplars that make the main roads of France so magnificent in their ordered pomp. But beyond the poplar avenue the lines, especially where they were broad, should receive a further plantation. Blossoming trees of all kinds might be set among the shell-holes and craters, and in spring and autumn would add beauty and dignity to the "Sacred Road."

As close as might be to the seashore should stand a great entrance arch, not so much an arch of triumph as of remembrance, telling in sculpture and inscription the meaning and message of the road. As the sections occupied by each of the three Allies were reached other arches should take up the tale—a Belgian arch, a British arch, and a French arch. Further, there would along the road be special monuments dedicated to special units. Thus at a point on the road nearest to the place of action, that unforgotten and unforgettable charge of the Worcesters—to take a specific example—should have its memorial.

A good example in the way of war memorials has been set by Mr. A. V. Paton, a Liverpool merchant, who has purchased and placed in the hands of the National Trust in memory of his brother, who fell gallantly fighting at Achi-Baba, 27 acres of a beautiful moorland height at Thurstaston, in Cheshire, which, within seven miles of Liverpool, gives a fair view over the estuary of the Dee, with sight of blue Welsh hills across the water-flood. There for years to come will the tired city man come for rest and the thinker come for thought; and it is certain that the beauty will not appear to them less because as they gaze they remember that a brave life that held this view-point dear willingly gave up that life to secure the fairness of the scene, the beautiful England he loved so well, to far-off generations.

A correspondent of the "Times" gives an interesting account of the model village near Ede created by the Dutch authorities for the reception of Belgian refugees, in which he says:—

The first thing that impresses one on entering the village is the generous scale on which it has been planned. There is no overcrowding, nor is there anything haphazard in the arrangement of the quarters of the refugees. The village is, of course, intended only for temporary occupation, but in its way it struck me as a model of town-planning. It is rectangular as a whole, and is subdivided into four rectangles of equal size. Three of these are self-contained subordinate villages each named after a Belgian river. Thus you pass from Scheldedorp (Scheldt village) to Maasdorp (Meuse village), and thence to Leyedorp (Lys village). The fourth rectangle contains the church, the schools, hospital, doctors' and nurses' quarters, post office, and other administrative buildings.

The residential villages are on the barrack principle. Their dormitories are named after distinguished Belgians—the Albert and Elizabeth dormitories, for example, in the Maasdorp; while similar quarters are the Rubens, Teniers, Van Dyck, Jordaens, Memling, Wierts, and Henri Conscience dormitories. I looked into several of these buildings, where, as an Englishman, I was greeted as a friend by the inmates. The accommodation seemed to be in every way adequate to the requirements of simple folk desirous of leading a decent and honourable family life.

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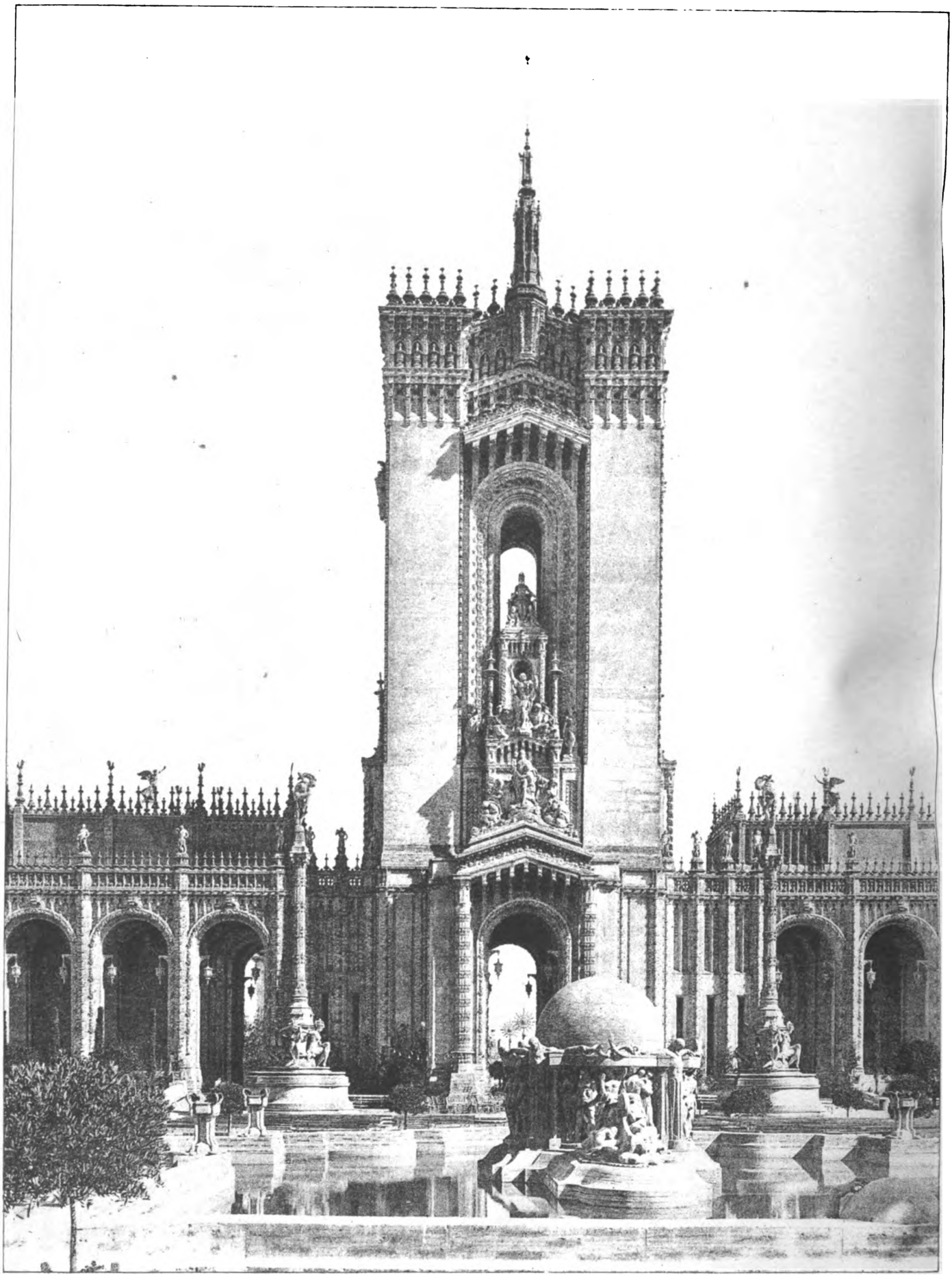
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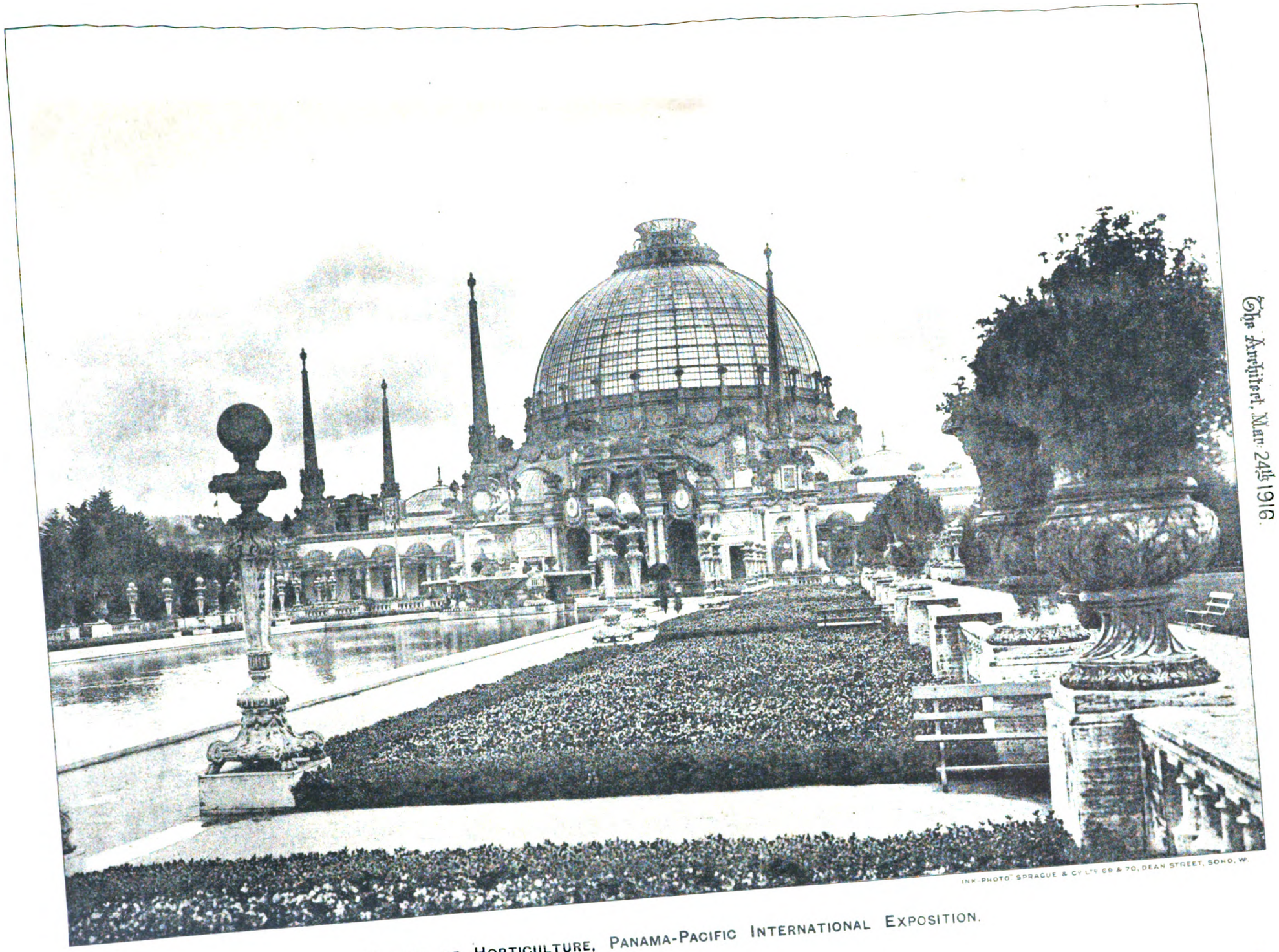
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COLONNADE, COURT OF THE FOUR SEASONS, PANAMA-PACIFIC INTERNATIONAL EXPOSITION.

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In the middle of each village there are three refectories named after famous Belgian towns—Antwerp, Liége, Malines, Namur, Brussels, Ghent, Bruges, Furnes, and Hasselt. These dining-rooms form three sides of a square, and are served from a common kitchen, situated in each case in the middle of the space formed by the three dining-rooms. All the buildings in the village are wooden bungalows, and all are warmed by central heating.

ILLUSTRATIONS.

PANAMA-PACIFIC INTERNATIONAL EXPOSITION.

WE this week complete our series of views and the description of the Panama-Pacific International Exposition. The photographs in this issue and that of March 24 were the productions of the Cardinell-Vincent Company, and are reproduced by permission of the Panama-Pacific International Exposition.

THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION, SAN FRANCISCO.

(*Concluded from page* 214.)

THROUGH the archway of the Tower of Jewels was to be seen in the centre the largest of the five Exposition courts, designated the Court of the Universe, because of the symbolical character of the decorative scheme indicating the meeting place of the Eastern and Western hemispheres. This court of honour was designed by the well-known New York firm of architects, Messrs. McKim, Mead & White. It had a length of 700 feet and was 900 feet wide. A feature of the design was the beautiful sunken garden arranged in the centre of the court, with a pool of water at the northern end played upon by the fountains of the two Suns, and embellished with statuary. Two massive triumphal arches, set with statuary, dominated the court. On the extreme right was the Arch of the Rising Sun, crowned with the magnificent heroic statuary group, "The Nations of the East," executed by three well-known sculptors, Messrs. A. Stirling Calder, Frederick G. Roth, and Leo Lentelli. The central motif was the elephant modelled by Mr. Roth, accompanied by the figure of a god set in the howdah representing the spirit of the East. On either side, as seen in the illustration, are to the left a Falconer, and to the right a Buddhist priest. At the far end to the left is the beautiful figure of an Arab warrior, balanced on the other side by a Mongolian warrior, both horses being sculptured by Mr. Leo Lentelli. Next to this last-named figure is a negro servitor carrying a basket of fruit, with a similarly designed figure on the other side, both about 13 feet high. Two well-balanced minor groups complete this wonderful conception. On the left is represented a Mohammedan camel rider; and on the right an Egyptian with standard, the camels being modelled by Mr. Roth. The group crowning the Arch of the Setting Sun, to the extreme left, symbolised "The Nations of the West." As in the other massive sculptured group, the credit for the conception of the design is due to Mr. Stirling Calder. The principal motif depicted in the figures is the representation of all the colonisers of different countries to whom the United States pays tribute for the organisation and development of the country. The central theme consists of a wagon on which are seated the "Hopes of the Future," representing two boys, symbolical of the white and negro races. The kneeling figure between the boys is "Enterprise"; and standing on the front of the triumphal car is the graceful figure of the "Mother of To-morrow." This group was modelled by Mr. Calder, with whom Mr. Roth and Mr. Leo Lentelli collaborated. The latter was responsible for the equestrian statuary; the horsemen on the left representing a French trapper and Latin-American; those on the right an Anglo-American and North American Indian. He also modelled the squaw, ranged beside the realistic figure of the mounted American Indian. The former, Mr. Roth, did the wagon and the oxen; the figure of the Alaskan on the left, the one remaining pedestrian figure on the right, the Italian, and its balancing counterpart, the German, on the left.

Directly ahead of the triumphal arches was arranged the colossal Column of Progress, symbolising progressive human effort, the conception of Messrs. McKim, Mead & White, architects, of New York. Worked on this were some of the finest sculptural friezes to be seen in the Exposition. At the base Mr. Isidore Konti executed a series of figures in high relief representing successive generations of mankind, pressing onward by the law of their being to the goal of life's efforts. The dominating group of sculpture, the work of Mr. Hermon MacNeil, was arranged above the capital of the column, and depicted a kneeling woman in fearful expectation, hopeful to applaud success; balanced on the other side by a guarding male, represented as supporting the central motif embodying that of the adventurous Bowman, who shoots his arrow at the target of Truth—whose whereabouts is known but to himself and his future countrymen in the west, the direction indicated by the pose of the figure. Supporting the central group, forming the magnificent circular frieze, were the crouching figures of the Army of Toilers, starting out to win success. The frieze was also executed by Mr. MacNeil.

At the south end of the court, balancing the Column of Progress, was the Fountain of Energy, symbolising the successful cutting of the Panama Canal. It occupied the round pool in front of the main tower, upon which it poured forth its unceasing stream of water, expressing the untiring efforts which were at last crowned with success in the cutting of the Panama Canal. The pedestal took the form of the earth sphere, supported in the water by sea monsters. About it in rotary movements, groupings of the Atlantic and Pacific Oceans, and of the North and South Seas gilded with attendant sirens and tritons sporting in their wake. Modelled in relief were depicted climbing the sphere to the base of the Victor many writhing figures, which, however, were prevented from ascending higher by the titans stretched across the upper portions of the sphere, representing the East and the West. A frieze formed of flying fish in the act of spouting sheets of water was placed above the titans. Completing the whole sculptural triumph was Energy, depicted in the nude form of a male mounted on a snorting charger, with outstretched arms, advancing, and holding the passage of the Canal. The winged figures of Fame and Valour, with trumpets upturned, sword and laurel, stand upon his shoulders proclaiming the Conqueror of the Canal.

Situated to the left of the central court, entered under the Arch of the Setting Sun, was the west central court, designed by Mr. Henry Bacon, of New York. It was known as the Court of the Four Seasons, being surrounded by a long colonnade, having niches in each of the four corners, containing sculptural figured groups, representing the four seasons, one of which Autumn is illustrated here, all modelled by the artist Piccirilli. For beauty and harmony of design, being inspired by the magnificent favourite villa of the Roman Emperor Hadrian, it was one of the most charming architectural compositions in the Exposition. To the south of the west central court was the small Court of Palms, entered from the South Garden, which, as would be gathered from its title, contained thousands of examples of magnificent palms. It was designed by Mr. George W. Kelham, of San Francisco, in the style of the Italian Renaissance. The two Italianesque towers reached a height of about two hundred feet. Balancing the Court of the Four Seasons to the right, approached beneath the Arch of the Rising Sun, was the Court of Abundance, designed by Mr. Louis C. Mullgardt, to give an oriental effect of the combined Spanish-Moorish style of architecture. A feature of this court was the Tower and Great Cascade, designed by the architect in the form of a staircase. Its spire was

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[Photograph by Cardinell-Vincent Company.

AUTUMN.—PANAMA-PACIFIC INTERNATIONAL EXPOSITION.

very delicate in harmony with the great beauty of the decorative theme, rendered on a soft purply-slate toned ground, with a central allegorical figured motif executed on the tower front, completed by the green-coloured pathway. At the extreme south end was placed the smallest of the courts of the Exposition. The Court of Flowers was likewise designed in semi-circular form by Mr. George W. Kelham, and was entered between two Italian towers, practically replicas of those in the other minor court as regards design.

On the east of the great walled-in enclosure, containing the eight chief palaces, was the Palace of Machinery; and flanking them on the west was the Palace of Fine Arts. The Palace of Machinery was by far the largest building constructed on the grounds, and was designed by Messrs. Ward & Blohme, of San Francisco, the last-named gentleman acting also as the Director of Works for the Exposition. It was 968 feet long and 368 feet wide, and the cornices alone used for the ornamentation of the structure would have covered, placed in a straight line, a distance of one and a-half miles. Therein were exhibited representative examples of machinery used in the generation, transmission, and application of power. Mr. R. B. Maybeck was the architect responsible for the erection of the Palace of Fine Arts. It was built of fire-proof material throughout; and the design takes the form of an arc 1,100 feet long from north to south, in the centre of which was constructed a magnificent dome, set amidst beautiful shrubbery and a placid lagoon, whose waters flapped against the sides of the steps. Within the palace was a complex colour scheme of great beauty acting as an effective background to the

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wonderful collection of pictures and sculpture to obtain which all the famous galleries of Europe, as well as the private galleries of American millionaire collectors, were laid under tribute; and, it may be added, all responded without demur. In addition there was a special collection of historic American art works.

The responsibility for the successful completion of the eight main palaces was undertaken by Messrs. Bliss & Faville, the architects appointed by the Exposition authorities, who, in addition, directed the construction of the walls forming the connecting passage-ways between the various courts. In this great work generous help was given by Mr. Paul Denivelle, in his capacity as Chief of Architectural Modelling and Wall Texture. As stated above, the façades of the palaces were in reality the walls of one or other of the three principal courts, and the architectural design was an exact representation of that particular style which dominated the court on which they fronted. The Palace of Education and Social Economy, as shown in the accompanying illustration, contained a variety of exhibitional studies in the sphere of world education as developed from 1905; and in the Department of Economy, exhibits relative to the conditions and necessities of man in his relation to society and government. One of the most striking of the group was the Palace of Liberal Arts, situated directly opposite the main entrance on the city side. It covered an area of approximately six acres, had an extreme length of 585 feet, was 470 feet wide and 65 feet high. A feature of the exhibits in the adjoining Palaces of Manufactures and Varied Industries, also illustrated, were the art industries of the various nations of the world. In the Palace of Transportation was displayed every phase of human genius in this direction, from the simple models of sailing yachts to the latest developments in electric agency and aërial navigation. Two palaces were given over to the interests of agriculture and food products. Everything concerned with agriculture and agricultural development, including every kind of farm implement and forestry and forest products, were shown on the forty acres of ground covering the space devoted to agricultural interests, of which about one-sixth was taken up with the palace itself. In the Palace of Food Products all the world's productions and methods of preparation were arranged. The last of the group palaces contained the natural mineral resources of the world. In this Palace of Mines and Metallurgy metals were to be seen in every stage, from that of mine exploration up to their manufacture into raw material for various industries and as girders and in other structural forms.

One other building remains to be mentioned, the Exposition Auditorium, designed as a four-storeyed steel and stone building by Messrs. John Galen Howard, Frederick H. Meyer & John Reid, junr. Its construction cost the Exposition authorities a sum of over £200,000, and on the site alone an outlay of nearly £200,000 was expended by the people of San Francisco.

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—XIV.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

THE Romanesque church of San Fermo Maggiore, near by and close to the Ponte Navi, is one of the four finest churches of Verona. Erected in the eleventh-twelfth centuries by the Benedictines, it is one of the beautiful examples of the combination of brick and marble so characteristic of Verona. The upper church, with the exception of the campanile and two apses, was, in the early part of the fourteenth century, rebuilt by the Franciscans in the Gothic style. The original church is said to date from 1065; the crypt is perhaps the oldest portion of the existing edifice, is of great interest, and contains noteworthy examples of fresco painting work.

There stands to the left on entering a charming monument to Aventino Fracastoro, physician of Can Grande I. The interior has only a single nave and no aisles, and is extremely beautiful with its old larch-wood roof ornamented with paintings and carvings.

Above the main entrance is a fourteenth-century Veronese fresco of the Crucifixion, ascribed to a very early unknown master. There are many other fine pieces in this old temple, including interesting examples of the Veronese school, and a pulpit which is a magnificent morsel of fourteenth-century work.

The Ponte delle Navi, which ends the Via Leoni, was erected in 1893 on the site occupied formerly by two stone bridges, which were destroyed by the overflowing of the mighty Adige of its banks, in two of this great river's periodical tempestuous fits, in 1757 and again in 1882. From this bridge a splendid view is obtained of the choir and transept of San Fermo and of the stretch of the river as far as the Ponte della Pietra, with the Castello San Pietro on the high bank to the right.

Passing eastwards in the Via Venti Settembre, the Vicolo Fieumicello is taken on the left, reaching the Santi Nazzáro e Celso, a Renaissance church rebuilt in



THE GRAND CANAL, VENICE, SHOWING THE PONTA DELLA SALUTE, THE DOGANA, AND THE CHURCH OF SANTA MARIA DELLA SALUTE.

1464-83, originally a Gothic structure of the eleventh century. It was again restored, it is said, in 1510. This church had originally five aisles, but these were reduced to three. It is full of very interesting items.

Proceeding in a northerly direction, the Giardino Giusti, reached through the cortile of the Palazzo Giusti, is next visited in the Via Giardino Giusti, No. 10. On the way the traveller's eye is continually attracted by the number of palaces and houses, particularly plentiful in this part of the city, of striking architectural merit and beauty.

This Giardino Giusti dates from the middle of the sixteenth century, and is a magnificent park, containing cypress trees of great height and age. Many of them are 136 ft. high and 400 years old; some, it is said, even 500 years, and one died recently at the great age of 700 years.

The view from the terrace is commanding and inspiring. The whole of the city is surveyed, the distant Apennines, Monte Pizzocolo, and Monte Guglielmo are included in what may be only described as a panorama of extreme loveliness.

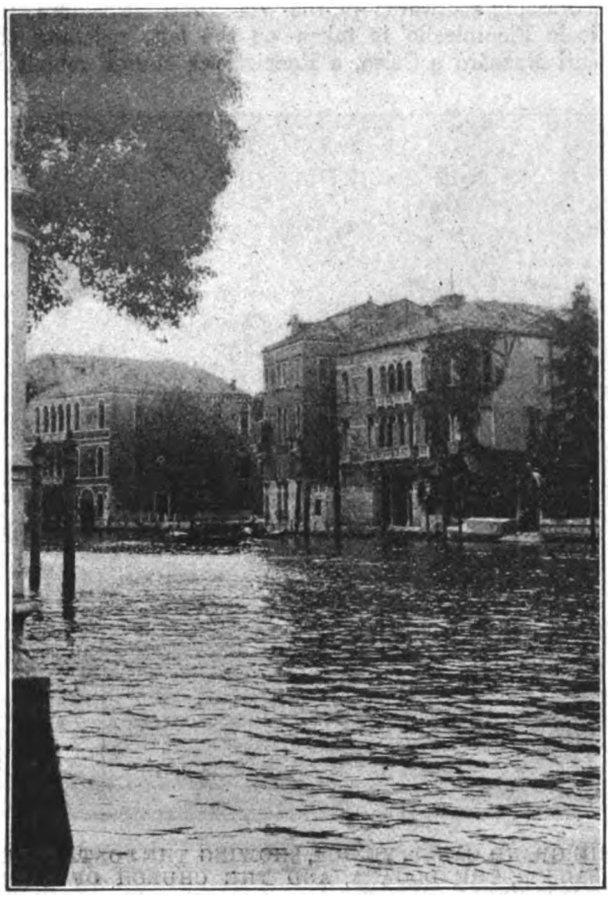
Keeping still in a northerly direction, in the Interrato

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dell' Acqua Morta, the ancient canal that separated the island of the Adige from Veronetta till it was filled in, in 1895, lies the church of Santa Maria in Organo, one of the Veronese churches of uncertain age and of very special interest.

This church is a foundation of the Lombard period; the foundation of the monastery of the same name is ascribed to Duke Lupone in 615 A.D. This edifice was rebuilt by the Benedictines in the Renaissance style in 1481. The celebrated architect, Sanmicheli, began the façade, but for some unknown reason it was left unfinished.

The interior of this church is famous for its frescoes and paintings. In the nave there are frescoes by Franc Morone, representing Adam and Eve, the Flood, Abraham's sacrifice, Joseph sold by his brethren, Passage of the Red Sea, Moses receiving the tables of the Law, David and Goliath, &c. There are also paintings by



VIEW ON THE GRAND CANAL, VENICE.

many Veronese masters, including Torbido, Balestra, Caroto, Brusasorci, Farinato, Zavoldo, and Giolfino.

The sacristy contains intarsia work by Fra Giovanni, one of Italy's greatest masters. Above the magnificent panels executed by this artist are frescoes by Morone. Altogether this sacristy is one of the most exquisitely beautiful in the whole of Italy. The last place to visit in this intensely interesting Italian city is the ancient little church of San Giovanni in Valle, situate at the end of a narrow way of the same name. Its original date appears to be about the fifth to eighth centuries; it was reconstructed in 1164. It is a flat-roofed basilica carried on columns with very early capitals, and generally it has all the apearances of being one of the first churches in Verona. There are, again, frescoes inside. In the crypt, which is of great beauty, are two early-Christian sarcophagi of much interest. Over the main entrance is a fresco of the Madonna by Stefano da Zevio.

Making the Hotel San Lorenzo in the Corso Cavour, and situate most pleasantly near the bank of the Adige, or some other equally good hotel, as headquarters, the traveller will find ample opportunity to employ his time fully and profitably for at least three or four days.

In wandering through this city's ancient squares and narrow winding streets, studying its gorgeous palaces and magnificent churches, its wonderful arches and doorways, and its stately campanili and picturesque balconies, the only regret one feels is that circumstances render a few weeks' sojourn impossible. One has to tear oneself away from this district so rich in wonderful monuments and stirring memories. Sorrowful, indeed, at leaving this centre of so much that is true and beautiful in art; but still with the prospect of further joy in undertaking what is to be the final, and certainly the most important stage in this all too short holiday.

Words are, indeed, difficult to find which will fully and adequately express the feelings of the lover of art when he commences the closing stage of such an indescribably enjoyable and eminently educational tour.

The Italian lakes are beautiful, with all the glories of their towns and villages, their stately mountain borders and sumptuous settings. Milan is gorgeous and entrancing in every conceivable way. Verona, a city of perfect architectural and artistic delight. But what of Venice, that city of wonder, the Queen of the Adriatic, with all its masterpieces of architecture and painting? The home of the most wonderful creations of the world's greatest masters. The amazing city of waterways, islands, and bridges, of famous churches and ancient palaces with their water-washed walls and portals. The silently moving picturesque gondolas, and artistically attired boatmen. The brilliant sunlight shimmering on the thousand domes, towers, campanili, and pinnacles. The sparkling canals, with the city's domes and walls brilliantly reflected into their silent waters. All to the architect on his first visit is a dream almost too unreal, uncanny, and incomprehensible, in crowded grandeur and perfection.

Milan, Verona, Padua, and Venice are to most only cities of history with wonderful monuments and famous in antiquity. Most of their works of art are known so well, but only in presentation on paper, and there is an amazing feeling of familiarity when actually viewing these artistic masterpieces, a feeling akin to old acquaintanceship and frendliness, that at times appears almost unnatural.

One feels at times, when looking upon many of these world-famed edifices and works of art, like one transported into some strange artistic heaven where works have been executed for no other purpose than the simple production of masterpieces.

Business considerations, it would appear, were nonexistent in those far-off days, and architects, one would surmise, must surely have been the most favoured of creatures.

It will be generally admitted that there is a desire of outstanding degree on the part of most, if not all, architects to visit at least two of the great cities and architectural centres of the world, and these are Venice and Rome. The other places visited in this tour have, of course, tremendous attraction for the architect, and to those may be added Pisa, Florence, and others. Nevertheless, it is suggested that, of all places, Venice and Rome occupy a paramount position.

The attractions of Rome, the "Eternal City," the capital of the kingdom of Italy, once the capital of the ancient world, are of course immense. Ancient Rome, with its Capitol, Forum Romanum, Colosseum, etc. The Rome of the Vatican, St. Peter's, etc., and the modern Rome. But notwithstanding, there remains an attraction about the "City of Islands and Canals" difficult to account for, besides being of quite a different character.

The question again of the distance to be travelled is to be somewhat seriously considered, in these days of short vacations and possibly limited means. Rome calls for a much more extended holiday, unless Central and Southern Italy are made the subject of one holiday, and

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the journey, say, as far as Pisa undertaken rapidly and without a break.

For an ordinary holiday, such as the subject of these articles, Venice forms a very fitting conclusion, for one feels, and reasonably so, that to obtain real and lasting advantage from such a feast as has been provided in the few weeks tour a rest may be looked upon as imperative. Venice alone contains within a comparatively limited area more artistic and architectural treasures than any other city in the world.

It is, therefore, with considerable satisfaction and pleasure that one undertakes the final stage of this tour —satisfaction that the city to be visited will complete one of the most gorgeous and artistic lessons one could partake of, and pleasure in feeling that not a single day will have been spent without obtaining some joy or education.

The strange mixture of sorrow intermingled with joy and satisfaction is consequently difficult indeed to explain, but is nevertheless present in the fullest sense.



THE ISOLA DI S. GIORGIO, VENICE, AND THE CHURCH OF S. GIORGIO MAGGIORE, FROM THE TERRACE OF THE GRAND HOTEL D'ITALIE.

The journey from Verona to Venice is undertaken via Padua and Vicenza, and is intensely interesting. The train immediately enters a most beautiful district, abounding in vines, mulberry trees, and other fertile growth, and after a journey of under one hour Vicenza is reached, some thirty miles from Verona.

Vicenza is worth visiting if one has the time. It is an ancient town of about 25,000 inhabitants, and is picturesquely situate at the north of the Monte Berici, a chain of volcanic mountains, with very old quarries. The town contains a number of fifteenth to eighteenth-century palaces, besides some fine religious edifices. Andrea Palladio, the great architect, was born here in the early part of the sixteenth century, and most of his principal works were erected in his native town.

A run of under twenty miles brings one to Padua, a town of about 52,000 inhabitants, lying on the Bacchiglione. A strange old place with its narrow winding streets, deserving a stay of a day or two if possible.

Padua is, like so many other Italian towns, of ancient origin, and under Augustus it was the richest town in Upper Italy. This town fell to Ezzalino da Romano (of barbaric fame) in the early thirteenth century, and in the Middle Ages took the side of the Guelphs. In the early fourteenth century Jacopo da Carrara was elected to the Signoria. The famous members of the house of Scala of Verona caused the ruling princes of that appointment much trouble. In the beginning of the fifteenth century Padua was annexed to Venetia.

Among the many buildings of fame in Padua are the Loggia del Consiglio, a very fine piece of Early Renaissance work attributed to Biagio Rossetti, and sometimes to A. Bassano; it has an open loggia or arcade approached by a broad flight of steps. The interior, it is recorded, was not completed until the first quarter part of the sixteenth century (1523-26). The Palazzo della Ragione, or the Salone, erected in 1172-1219. The Salone, or Great Hall, on the upper floor, is some 270 feet long and 93 feet wide, with a height of 79 feet—a vast place, and one of the curious architectural objects of Padua. The interior is still in its original state, and the vaulted wooden ceiling is most interesting, and dates from the early fourteenth century; it was designed, it is said, by Fra Giovanni. The exterior of this building has been much modernised.

The Eremitani, an old Augustine church of the middle of the thirteenth century, is a huge and singular structure, with its wide nave of great length, unbroken by aisles. Restored in 1880, this fabric is of great interest, having frescoes by Andrea Mantegna and others. San' Antonio, a most remarkable edifice, ranking amongst the most remarkable structures existing in Italy, erected in 1232-1307. It is a great structure 126 yards long and 60 yards wide, built almost entirely of light red bricks. It has two campanili and seven domes in oriental style, similar to St. Mark's, Venice. One might be looking upon some structure in Cairo, the general effect, particularly from a distance, being decidedly Eastern. The cathedral, built in the sixteenth century in the Late Renaissance style, with its unfinished façade; the Scuola del Santo, a hall containing several frescoes (three of which are attributed to Titian); the Cappella San Giorgio, again containing a large number of frescoes; the old conventual church of Santa Giustina, a beautiful Renaissance fabric, 364 feet long and 98 feet wide, started by Girol da Brescia in 1501, and completed in 1532; the Madonna dell' Arena, a chapel erected in 1303 by Scrovegno, of oblong shape, and containing a number of famous frescoes by Giotto; complete the list of buildings (with the addition of perhaps a few others) worthy of note in Padua.

Leaving Padua and its great roof of the Salone della Ragione, and the oriental-looking campanili and cupolas of San' Antonio, the train carries one towards Venice, the destination anxiously looked forward to.

The Venetian Alps are seen in the distance, and after passing through Mestre, a small town of no great importance some eighteen miles from Padua, soon the towers of Venice are seen rising out from the watery expanse in the distance.

Fort Marghera is now approached, and then the long bridge is reached, 2¼ miles long, consisting of 222 arches of 31 feet span. This bridge, built in 1846, and widened some few years ago, is the means by which the traveller is carried across the Laguna Véneta. Some ten minutes pass in traversing this immense structure, and then the station is entered. After the usual examination of luggage, a process attended by some considerable excitement, one finds oneself outside of the station and comfortably seated in one of the picturesque gondolas, and being rapidly propelled over the still waters of the narrow winding canals, dreaming of the

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happiness in store and startled at intervals by the sharp strange cry of the boatmen, "Sia stali" ("Keep to the right"), or "A-òel" ("Look-out"), as the quick turns are made round the various sharp corners.

(To be continued.)

DUNFERMLINE ABBEY.

By P. MACGREGOR CHALMERS.

ST. MARGARET OF SCOTLAND, whose church at Iona was described in a recent article, died in Edinburgh Castle, and was buried in Dunfermline, in the church which she and King Malcolm III. had erected soon after their marriage in the year 1070. This building was taken down in the following century and gave place to a great abbey church, with choir, nave, transept, and central tower. It is probable that the foundations and fragments of the lower walls of the early church are preserved under the present building. The general opinion is that its site was under the choir. It is now proposed to place on record such evidence as is available in support of the suggestion that the buildings at Iona and Dumfermline were developed on somewhat similar lines, and that the site of St. Margaret's Church is at the east end of the nave.

Fordoun wrote his chronicle in the latter part of the fourteenth century, when Dunfermline Abbey was in all its glory. He described the translation of Malcolm's relics from Tynemouth to the church at Dunfermline, where they were laid before the altar of the Holy Cross, and the translation of St. Margaret's relics from the stone grave to a shrine of deal set with gold and precious stones.

Wyntoun, whose Chronicle was written about the beginning of the fifteenth century, thus describes the translation of the relics of Malcolm and Margaret in the year 1250:—

"Sancte Mergretis body a hundyr yhere
Lay before the Rude alteyr
In to the kyrk of Dunfermlyne;
Bot scho was translatit syne
In to the qwheyr."

. . . . . .

. . . "thai tuk up the body
Off hir lorde, that lay hir by,
And bar it ben in to the queyr."

It is clearly indicated that the graves of Malcolm and Margaret were not in the choir.

The references to the Rood Altar, or the altar of the Holy Cross, are important. It was the rule in the mediæval church to place the Rood Altar, with its screen, at the east end of the nave. In great churches, with central towers and transepts, the rood screen was frequently erected between the two great piers that supported the west side of the tower. We learn from the "Rites of Durham" that this was the arrangement at Durham Cathedral, and that the screen there had two gates or wickets, one at the north side, close to the north pier of the tower, and the other at the south pier. In this, as in much else, the builders of the mediæval church at Dunfermline appear to have followed the Durham model. The historians of the fourteenth and fifteenth centuries would naturally indicate the spot where Malcolm and Margaret were buried as being "before the Rood Altar," if the site of the early church in which they were laid to rest was at the east end of the nave.

The chronicle known as the "Book of Pluscarden" was written about the year 1461 by command of Richard Bothuele, abbot of Dunfermline. The account given there of the translation of the relics in the year 1250 may be summarised thus. The silver shrine set with gold and precious stones was taken to the outer church or nave. St. Margaret's relics were lifted from the grave and deposited in the shrine, which was then raised without difficulty, and carried in procession towards the choir. On reaching the southern wicket of the chancel, at a point opposite the tomb of Malcolm, which was on the north side of the nave under an arched canopy, the bearers had to lower the shrine to the floor because of its sudden increase in weight. It could not be lifted until Malcolm's grave was opened, and his relics were translated with those of his queen.

The testimony of the chronicles seems to be that the site of St. Margaret's Church is at the east end of the nave. The queen's grave may have been in the centre of the floor of the early church in front of the altar. It is possible to suggest that King Malcolm, who was probably the true founder of the church, commanded that his tomb should be constructed in his lifetime, as part of the fabric, in the north wall near the altar. This may explain in part King Alexander's action in bringing his father's body from Tynemouth. In spite of much romance by monkish chroniclers, it can hardly be doubted that a great king like Malcolm was master in his own house. The tombs were on the west side of the rood screen of the later abbey church.

Passing from the chronicles to the testimony of the stones, it is necessary to pay well-merited tribute to the memory of the late Rev. Dr. Peter Chalmers for his labours as historian of Dunfermline. He was parish minister from 1817 to 1870, and saw the removal of the remaining fragments of the ancient choir, and the erection upon its site of the present parish church, which was completed in the year 1821. The ruins of the abbey were measured and drawn by Mr. J. Baine in 1790, and by the Rev. Mr. Syme in 1805. It is possible from the published plan to throw fresh light upon some parts of the history of the building.

The semicircular apse of a church is shown upon the plan at the east end of the nave, and the area to the west of the apse is described as the place of royal sepulture in early times. This was indeed the place of royal sepulture, and the apse may be recognised now as the apse of St. Margaret's Church. In this respect the plan of the church at Dunfermline differs from the plan of the church at Iona, where the east end is square, due to Celtic influence, and adherence to the model of the Jewish tabernacle. The Dunfermline work shows the influence of Rome. St. Margaret's Church at Iona measured 36 feet long inside by 17 feet broad, whilst the cathedral church of St. Andrews (St. Rule's), built about the end of the tenth century, was only 26 feet long by 20 feet broad. The early church at Dunfermline seems to have determined the width between the piers of the later abbey. It was probably 40 feet long by 20 feet broad, and it is almost certain that the plan included north and south transeptal chambers as at Iona. The plan of St. Margaret's Church, thus outlined and shown on the accompanying sketch (fig. 1), corresponds with the plan of the early church which was found under the floor at the east end of the twelfth century Norman nave of Romsey Abbey, near Salisbury. The full value of this parallel illustration will be appreciated when it is noted that St. Margaret's sister was abbess in this early church at Romsey, and there the two daughters of Malcolm and Margaret were educated.

It is recorded that King Alexander I., who died in the year 1124, added buildings to the church erected by his father and mother; but, whatever their nature, they seem to have had no permanent influence.

It was King David I., the youngest son of Malcolm and Margaret, who brought monks from Canterbury to Dunfermline about the year 1128, and began the erection of an abbey church which reveals by its size and magnificence, compared with the church founded by his parents some fifty years earlier, the wonderful change effected in the conception of what was fitting for the house of God. The first work undertaken was, most naturally, the erection of a great three-aisled choir, with tower and transept. These buildings did not interfere with the early church. It was preserved until about the year 1140, when the nave was built, as is proved by the architectural details.

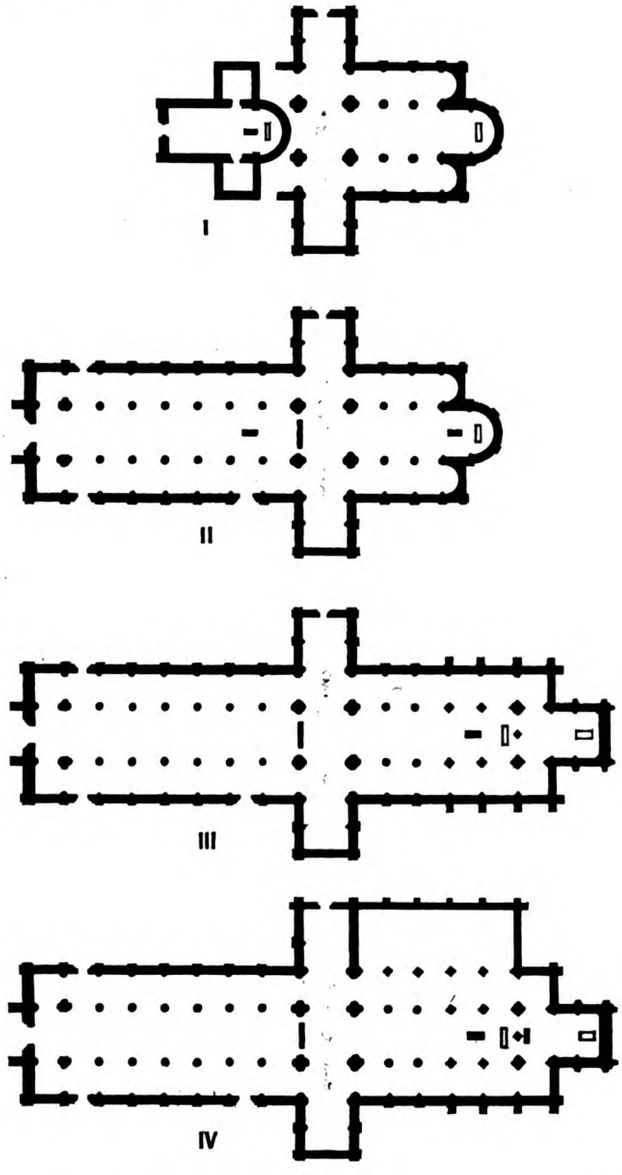
The designer of the nave was not unmindful of the reverence that was due to the spot where lay the bodies of Malcolm and Margaret, the founder's parents, and it can hardly be doubted that he endeavoured to secure this sense of reverence by richly decorating with spiral and

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zigzag lines the four columns—two on the north and two on the south—at the east end of the nave. The area between these four columns may have been enclosed by screens which, in the view of the later abbot to whom had been granted the privilege of wearing the mitre and the ring, were a serious obstruction to ceremonials.

It is possible now to attempt the reconstruction of the plan of David's choir from the outline of the semicircular apse which was discovered near the east end of the later abbey buildings, and is shown on the plan of the ruins. The choir was about 65 feet long, with a semicircular apse at the east end, the side aisles were divided from the choir by arcades of three arches, the measurements indicate that there was a semicircular apse at the east end of both side aisles, the tower was 20 feet square inside, and the transept was 106 feet long by 20 feet broad. The east end of the choir was evidently a reproduction of the Norman east end of the Cathedral of Durham, which may be seen still under the choir floor. The destruction of all this work, probably King David's most splendid monument, may well be greatly deplored.

The accompanying sketches show (fig. 1) the relation of David's choir, tower and transept to St. Margaret's Church, and (fig. 2) the abbey church when completed and dedicated in the year 1150.



King David died in Carlisle in the year 1153, and his body was brought to Dunfermline and buried before the high altar.

King Malcolm IV. died in the year 1165, and was buried on the right of his grandfather, David I., in the middle of the choir, before the high altar.

The apsidal east end of the abbey was taken down about the year 1240, and a new and more magnificent work was erected upon the model and in the beautiful style of the Cathedral of Glasgow, then in process of construction. The centre aisle of the choir was increased in length by about 7 feet only, but, as in Glasgow, a processional aisle was added behind the high altar, giving access to a Lady-chapel, the site of St. Margaret's famous shrine. There is evidence that the greater part of King David's Norman choir, including two pillars and two arches of the arcades, was retained. Three new Early English arches of greater span than the Norman arches were added. The choir was used for the first time on the completion of the alterations on June 19, 1250, when the relics of St. Margaret were translated to the jewelled shrine which was the gift of the Bishop of Glasgow, who was at the moment providing for his own cathedral a shrine of similar design for the relics of St. Mungo.

A dispute arose over the proposed dedication of the abbey. David de Bernham, Bishop of St. Andrews, was passionately devoted to the dedication of churches, and, it would appear, wished to add Dunfermline abbey to the list of 140 churches which he had already dedicated. The abbot and convent resisted this claim and carried their opposition to Rome. The Pope decided that dedication was unnecessary, since so large a part of the older dedicated church remained. In the light of what has been revealed now this judgment appears just.

The accompanying sketch (fig. 3) shows the abbey as completed in the year 1250.

King Robert the Bruce, who died in the year 1329, was buried in Dunfermline, in the middle of the choir and before the high altar. His grave, which was probably immediately to the east of King David's grave, was discovered in the year 1819. A large slab of porphyry now marks the site. It may be noted here, because of the reference to the plan of the abbey, that Robert Stewart, the great Duke of Albany, who died in the year 1420, was buried at Dunfermline between the choir and the Lady-chapel—that is, behind the high altar and in the eastern processional aisle.

A new aisle was added to the choir on the north side some time during the fourteenth century after the burial of King Robert the Bruce. It was 25 feet broad and five bays long. Many drawings of the aisle have been published (one was published by Pennant in 1776), and they all show the two bays at the west side with windows of three lights, and about 2 feet narrower than the three bays on the east side, which had windows of four lights. These five bays corresponded to the number of arches in the choir, and the narrowness of the two bays on the west was due to their being governed by the two narrow Norman arches of King David's early work. The accompanying sketch (fig. 4) shows the abbey as it was completed in the fourteenth century.

[A portion of this article appeared recently in the "Glasgow Herald."—Ed.]

TREASURE TROVE.

In one of our Notes and Comments last week we referred to a suggestion by Dr. F. J. Waldo as city coroner that the Corporation of the City of London should bring an action against the Trustees of the London and British Museums for the recovery of certain treasure trove. Dr. Waldo has since sent us the extract from the annual return which deals fully with the question. It is as follows:—

"In my last return (for 1914) I called the attention of your Corporation, at some length, to the alleged discovery in the City of treasure trove consisting of Tudor ornaments made of gold and of jewellery set with precious stones of considerable value. At the same time, *inter alia*, I pointed out the fact that treasure trove unearthed in the City of London, or in the ancient Borough of Southwark, belonged not—as is usually the case in other

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districts—to his Majesty the King, but by Royal grant to the Lord Mayor, Commonalty, and Citizens of London. Also, that the charters mentioned were confirmed by the Inspeximus Charter, in Latin with seal attached, of June 24, 15 Charles II. (1664), which had been examined by me in the chart room at the Guildhall. I also quoted Sir Thomas Hardy's translation of this charter, which says: 'We do give and grant to the Mayor, Commonalty and Citizens, and their successors, treasure trove in the City of London, or the liberties thereof, &c.' On presentation of my return, being consulted as to precedure, I suggested that your County Purposes Committee, who are considering the matter of the treasure trove, should forthwith obtain the assistance of the City Police in view of the importance of obtaining direct evidence as to the exact spot where the treasure had been found. At the same time it seemed to me not unlikely that the Police might also discover the whereabouts of some of the treasure, not infrequently in such cases disposed of by the finder or finders. On the report of such finding to the Coroner, in whose district the treasure lies, it becomes his duty to call a jury and make inquiry, and on proof of intentional concealment the concealer lays himself open to prosecution, fine, and imprisonment. This duty was specifically assigned to the Coroner by Edward I. in the year 1276 (1), and re-imposed in Section 36 of the Coroners Act of 1887, and is still in force.

"So far as I know the Police have not yet moved in the matter. At present, the major part of the treasure is still in keeping at the London Museum, Lancaster House, St. James's, S.W. (2), while a smaller portion of it was seen by me in 1915 on view in the Gem and Gold Ornament Room of the British Museum, Bloomsbury, W.C. (3), with the following legend inscribed on the cabinet in which the treasure is contained:—'English jewellery found in London representing part of a goldsmith's stock—the greater portion of which is in the London Museum. Given by the Rt. Hon. Lewis Harcourt, Secretary of State for the Colonies, 1914. The objects marked A. and E., evidently from the same find, were previously acquired, seventeenth century.'

"The suggestion has recently been made that I should hold an inquest on the trove, in answer to which I have explained to your County Purposes Committee that this cannot be done so long as the treasure lies outside my district and jurisdiction. Neither have I any power to order those in possession to return the treasure to the City from whence it has undoubtedly been removed without any notice whatever to me as City Coroner. Under existing circumstances—failing the voluntary delivery of the treasure—it is open to your Corporation to bring a civil action in the Chancery Division against the Trustees of the London and British Museums for the recovery of the trove. As already pointed out by me, this can be done short of any inquest having been held in a Coroner's Court (4). Personally I am inclined to think that under all the circumstances of the case the better course for your Corporation to adopt would be, without further delay, to bring a civil action in order to decide once and for all whether the ornaments in question are technically treasure trove, and, if so, who are the rightful owners thereof. It has been held in the Courts that no Coroner has any power to inquire as to the title of treasure trove, which alone can be decided by the Judges in the High Court.

---

(1) By the statute of 4 Edw. I., it was enacted that "a Coroner ought to inquire of treasure that is found, who were the finders, and likewise who is suspected thereof; and that may be well perceived where one liveth riotously, haunting taverns, and hath done so of long time; hereupon he may be attached for this suspicion by four or six or more pledges, if they be found."

(2) A coloured plate of 52 of these ornaments is given in the Ladies' Supplement of the "Illustrated London News," July 18, 1914, with the following note appended: "This collection of jewels and unmounted stones was discovered in 1912, in London, under the floor of a cellar, at a depth of 16 feet from the present surface. The box which had contained them was completely decayed, and only the brass handle and a few shreds of wood remained. The 'find' is of great archæological value, as it probably represents part of the stock of a jeweller of the time of James I. With the jewels were several religious objects in crystal, which were probably of a somewhat earlier date—that is, the late sixteenth century. This collection was purchased through the Rt. Hon. Lewis Harcourt, P.C., M.P., one of the Trustees of the London Museum, and can be seen in the Gold Room at Stafford House."

(3) The British and London Museums are now temporarily closed.

(4) See City Coroner's Annual Return for the year 1914, p. 26, line 8, and p. 5: "So far as it can be gathered, the trove has been secured by the Treasury by a secret arrangement with a certain person or persons, and no reference has apparently been made to the Coroner of the district in which it was found, whether that district be in the City or elsewhere."

THE TOWN-PLANNING PROPOSALS OF THE URBAN LAND REPORT.*

By H. R. ALDRIDGE, Secretary of the National Housing and Town Planning Council.

(*Concluded from last week.*)

IN conclusion, may I examine some of the principal arguments in favour of making town planning obligatory on local authorities?

The first of these is that we are a practical utilitarian people, and that only by town planning can we secure the utilitarian ends in which the soul of the nation delights.

I have been greatly interested in a review in which the endeavour which I have recently made to state the fundamental principles of town planning is thus criticised: "The gospel according to Aldridge would give us utilitarianism in all its nakedness."

It is interesting to find that this writer has struck what I venture to think is the right keynote.

If we can convince our legislators that town planning, when made obligatory, will render utilitarian—or in other words, useful—services to the community, then the battle will be easily won. It is essential that we should make it clear to them that we are urging that town planning shall be made obligatory, not to secure the "pretty-pretty" adornment of towns, but to minister to the fundamental needs of the people.

Rightly understood, the nakedness of utilitarianism is much to be preferred to that aimlessness and drift which is so often characteristic of the proposals of those who criticise it. Utilitarianism provides the bones of the skeleton to which the living flesh and blood of beautiful adornment can be added. Without the bones you will have the formlessness of the jelly-fish, and I much prefer to belong to the "utilitarian" school than to the "jelly-fish" school.

The second argument is that watchful care in regard to the guidance of growths is of value in all fields of organic development, and to the extent to which the growth of a city or village is an organic growth it is also true of city and village growth.

In regard to this may I point out that the exercise of foresight and wise control in the development of the human body, in the cultivation of the plant in the garden, and of the grain in the field, are all productive of good results? The difference between care and the absence of it, as far as children are concerned, can be realised in comparing the rich child playing in Kensington Gardens with the slum child playing in an East-End slum. Similarly, if the garden is not wisely tended, and if the field is not carefully cultivated, the results—whether in beauty or in economic product—will be less than they would be if human intelligence, knowledge, and foresight were applied to the task.

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What is true of the garden is true of the town. If it is permitted to grow haphazard, the results must be inferior to those which would be attained if human intelligence and knowledge are applied to the task of guiding its growth.

The third argument is that it is only by the application of definite effort to the task of planning or remodelling the cities and villages in which men live that community life can be fully developed on right lines; and, further, that the more the efforts of local authorities are applied to this task the greater will be the benefits conferred not only on each particular town, but on the general community.

The highest type of town or village planning will not be evolved out of the "inner consciousness" of the town-planning genius. It will be secured by the steady application of the thought, ability, and skill of many minds.

I am profoundly convinced that, in the interests of the evolution of the art of town planning, town planning should be made obligatory on local authorities. Let it be presented to them as a task which must be fulfilled, and I am sure that in the course of time the desire to exercise good craftsmanship on the part of the officers and all those to whom in co-operation with local authorities the preparation of schemes will be entrusted will do as much to develop and ripen our town-planning methods as the long chain of inventors have done in transforming the "Rocket" into the modern locomotive flying along at seventy miles an hour.

The fourth argument is that local authorities cannot adequately perform their duties in the districts which they control unless the preparation of town-planning schemes is made a statutory duty the performance of which devolves upon them.

It is not enough for local authorities to spend money on sanatoria and hospitals, to lessen the ill-health amongst the poorer members of the community. The millions of money we are spending on the construction of sanatoria could for the greater part be saved—not to speak of the human suffering which might be averted—if only the areas in which people live were properly planned and the problems of air and light in the factories in which they are employed were dealt with on the right lines.

But local authorities will only realise this when they are engaged in the work of actual town-planning administration.

Have you ever realised how much more potent persuasive force there is in experience as compared with argument? For one man who is taught by argument there are a hundred men who are taught by experience.

Let us therefore take our courage in both hands and ask Parliament to recognise that town planning should be made obligatory.

The fifth argument is that unless we make town planning obligatory we shall not secure orderly general development, but that the lines of growth of the country will be like the curate's egg—"good in parts."

How absurd it will be if when a district has been placed under town-planning control, and in which, as a result, wise provisions as to roads, provision of garden space and lay-out generally, are in operation, an indifferent local authority governing the adjoining area permits an absolutely different standard to be followed on the borders of the well-planned area!

It is true that local authorities have the power to plan not only the land in their areas, but to plan the land beyond, and in this way the evil may be dealt with; but it is at the best a poor way out of the difficulty.

Among the trees uprooted in Theobald's Park in the recent storms was a large elm of great age. Entangled in the roots were some bricks and mortar, and examination by an archæologist of the cavity in the earth has revealed the existence of part of the foundations of the extension of King James's Palace, which formerly stood in the Park, but was pulled down by order of the Commonwealth.

ART IN LONDON.

Royal Society of Painters in Water-Colours.

In the one hundred and sixty-sixth (the summer) exhibition of the Water-Colour Society at the Pall Mall East Gallery we are confronted by a satisfactory output of work; not too much to enjoy, and to a large extent of a quality that wins our admiration.

Always there are painters whose works in general we like, and those, again, who in general meet with our disapproval; though in one case and the other there are to be met with some examples that call for contrary criticism.

A commencement may be made with the works of the President, Mr. Alfred Parsons, R.A. Of his five works, four certainly attracted us; the artist uses a particularly bright palette, which rarely descends to crudity of effect. "Delphiniums," a study which is delightfully fresh and realistic; "The Green Glade" and "Langland Bay," put in with vivid brilliance of colour, though in the latter case perhaps exaggerated; and "A Backwater on the Ouse," which is compelling in its attractiveness. As a rule, Sir Ernest Waterlow's touch is self-proclamatory, but without being self-assertive; it is free from the faults of many of the modernists, and seems to look lovingly back to the early nineteenth-century landscapists. Sir Ernest is an artist au naturel, and even where neighbouring canvases may be attractive (far more so where they are otherwise), we at once recognise the superior claims of his Art. Miss Clara Montalba has had her day, and a bright one; therefore we will not dwell upon its twilight period. Mr. Albert Goodwin surpasses himself in the exhibition, if that be possible; of the eight works shown, one alone failed to prove attractive, and this was "Canterbury"; nor was "Naples" up to the level of his remaining exhibits; "Westminster" was a revelation, nor was the interest lessened because of the difficulty of reconciling the relative position of the Abbey and St. Stephen's. Mr. Reginald Barratt's "St. Mark's, Venice," showing the central west doorway, is honest and vivid brushwork. We must devote an appreciative few words to Mr. Arthur Hopkins' "Rosalind." Without any effects produced by play of light and shade, even with a somewhat flat result, yet its delightful colour and composition render it notable. Mr. C. Napier Hemy is always good, but at times he exhibits a lack of the sense of relativity. Mrs. Laura Knight's art shows a lamentable sameness of mediocrity, at times varied by improved conditions; but why does she get such uninteresting models? Mrs. Allingham is again to the fore with her charming rural subjects, and Mr. Charles Gregory also portrays the countryside with a touch and a sentiment peculiarly his own. Mr. Claude Shepperson's "The Homecoming" has a quality of design which holds a special appeal under existing conditions. Mr. Henshall is once again to be congratulated upon his story-telling pictures; his art is one that we would recommend to the study of many another artist. His attention to chiaroscuro and the warmth of colour are outstanding qualities.

Mr. Lamorna Birch's "Bickleigh Vale" merits great praise; the subject evidently proved sympathetic. Mr. Harry Watson's "Promise" is all very nice and Arcadian, and so is his "Romantic Shore," and yet we do not quite see why. Why this nudity and semi-nudity?

We have no space for further consideration of the show, though there is very much we have passed by unnoticed here. The quartette of works which we regard as the best in a really good exhibition are Mr. Henshall's "Soldier's Wife," Mr. Goodwin's "Westminster," Mr. Gregory's "Ullswater," and Mr. Hopkins' "The Saddles," though we confess that, in singling these out for special notice, injustice may seem to be done to so much work that is truly admirable.

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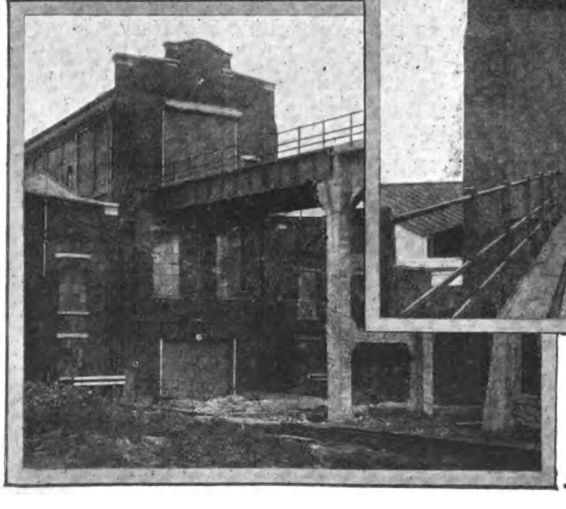
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Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Form IV.—Important Test Case.

SIR,—The judgment of the Final Court of Appeal in the case of "The Attorney-General *v.* Foran," delivered on March 27, proves that ever since the valuation under the Finance (1909-10) Act, 1910, was started, the Commissioners of Inland Revenue have misused their administrative powers.

It is only necessary to give a few quotations from the judgment:—

Lord Atkinson: "But to this statutory estoppel, shutting out the truth and working possible injustice, are the Commissioners so devoted that they refuse to be bound by the Court of Appeal, and bring the respondents before this House in the effort to sustain a proceeding which, even if it were technically within the letter of the law, has no merits to support it?

"The Commissioners thus insisted that a return should be made as required, under a penalty of £50, and now have the coolness to contend that the respondents, acting thus under compulsion, had by sending in a return, waived all objection to the notice by reason of defects in it of which they had then no positive knowledge or even authentic notice. A more unsound contention could not well be urged, and, having regard to the refusal of the request for further time, a more unmeritorious one. Fortunately, it is not often that one finds public Departments adopting such a course."

Lord Wrenbury: "I regret that a form issued by a Government Department with a view to enforcing liability under a taxing statute should assume a shape which I should not be surprised to find in a prospectus issued by a company promoter, but which is not worthy of the source from which this document comes."

Incredible as it may seem, attempts by the Commissioners to extort revenue without legal warrant by means of tricks or threats of litigation are only too numerous, and characteristic of the administration of the land taxes and valuation from their inception.

Surely the Government can now have no alternative but to instruct the Commissioners of Inland Revenue that such practices as those animadverted on in the judgment quoted above should at once cease.—Yours, &c.,

DESBOROUGH.

The Land Union, St. Stephen's House, Westminster, London, S.W.: March 31, 1916.

The Aeronautical Institute of Great Britain.

SIR,—Thinking that it may prove of national interest, we are communicating to you the following telegram we have sent this morning to the First Lord of the Admiralty:—

"First Lord,

"Admiralty, Whitehall.

"Reference sunken Zeppelin L15 which we are informed now lies in shallow water, it is thought by Institute after careful consideration that, provided salvage work is supervised by person intimately acquainted with and possessing thorough technical practice of Zeppelin construction, airship could be rescued and rebuilt. If, however, salvage work is undertaken by person without such detailed knowledge, the risk of airship being altogether ruined and rendered absolutely useless is greatly increased.

"Institute considers that provided immediate available services of a man with actual practice in Zeppelin construction is utilised airship could be saved, rebuilt, and launched against enemy within three months, and Institute is prepared to undertake, even at its own cost, work of salvage.

"The work should, of course, be proceeded with at once, and to save delay we are wiring this telegram to Prime Minister and Secretary for War."—Yours, &c.,

L. BLIN DESBLEDS,
Hon. Sec., Aeronautical Institute.

LITTLE THINGS THAT COUNT.

IT has been truly said that trifles make perfection, and that perfection is no trifle. Progress is made up of little advances here and there, each advance, trifling perhaps in itself, but representing in the aggregate a development that may constitute a revolution. Take, for example, the common wood screw. This is a simple enough device, yet a trifling improvement in its design laid the foundation of the Nettlefold business. In the screw made under this patent, not only is a sharp point provided, but the body and threads taper slightly towards the point. Less effort is thus required to drive the screw into wood, while the wedge action causes the screw to hold more firmly when driven home. A simple improvement, but one that has brought fame and fortune to its inventor. It is the little things that count.

In the early days of the bicycle, solid rubber tyres were the only type known, and rough was the travelling with nothing but solid rubber to absorb inequalities in the road surface. An improvement upon this was the "cushion" tyre, a tubular form with walls of rubber thick enough to take the weight of the machine and rider, but giving a slight cushioning effect when passing over irregularities. It occurred to Dunlop that a better effect would be produced by using a thin tubular tyre inflated with air at such a pressure that its shape would not be affected materially by the weight of rider and cycle, but it would give to every irregularity of the road, absorbing the shock which would otherwise be transmitted to the rider. Another simple idea, but one which has made possible the extraordinary developments during recent years in cycling, motor cycling, and motor transport generally. It is the little things that count.

The evolution of the steam locomotive affords another illustration of the point. In every essential the huge express railway engine of to-day is the same as Stephenson's "Rocket" of 1829. The latter had a coal-fired boiler generating steam that drove a piston forward within a cylinder, the movement of the piston being communicated by a connecting rod and crank to the flanged driving wheel running on rails. The difference between the engine of to-day that draws a high-speed train weighing 300 tons or more and its original which is now an exhibit at South Kensington, lies in the improvement of detail. Higher steam pressures are possible by the use of more suitable material for the boiler; steam can be raised more quickly and the pressure maintained more easily by the addition of boiler tubes and the use of forced draught. The slide valve did away with the oscillating cylinder, the double-acting cylinder gave an impulse to the piston at both ends of its stroke, and scores of minor improvements added to the efficiency of the machine, which even Stephenson himself would scarcely recognise as a development of his pioneer work. It is the little things that count.

In the same way the difference between the Rolls-Royce of to-day and the Benz car of 1885 is not fundamental, but is made up of countless trifling improvements. Vertical multi-cylinder high-speed engines have replaced the slow-speed horizontal single-cylinder motor that Benz designed. Gear-wheels and clutch have replaced belts and fast and loose pulleys, magneto ignition has superseded the porcelain tube heated by a blow lamp, the carburettor has been improved out of knowledge, while other developments relate to the cooling system, suspension, construction of the chassis, and so forth. There has been no change in principle, but merely steady improvement in detail. It is the little things that count.

With electrical devices the same principle holds good.

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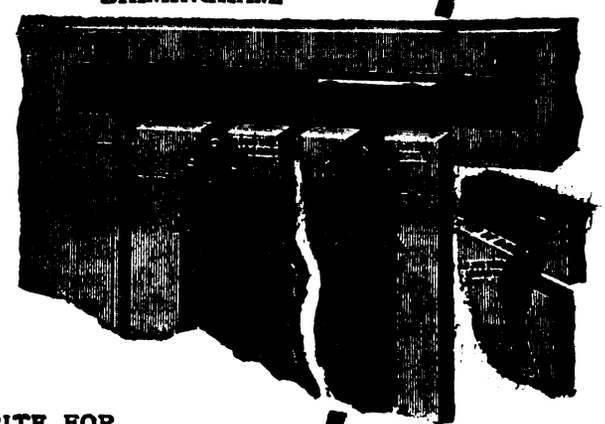
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The glow-lamp of to-day is a very different thing from that type of thirty-six years ago, yet its light is produced in the same way, within an exhausted bulb, by a filament raised to incandescence through the passage of current. Improvements are concerned with the type of filament used, the method of support, with the kind of vacuum secured, with the use of special methods of counteracting blackening, and with scores of minor details, that by themselves seem perhaps of small moment, but in combination make up the difference in efficiency, life, and strength that exists between the lamp of to-day and that of 1879.

In the Mazda lamp, for example, one of the many details in construction that have made for mechanical strength is the method of support for the filament loops. When filaments of squirted tungsten were used, involving a number of short hair-pin shaped pieces, the ends had to be cemented or welded to stiff supports radiating from the central glass stem (fig. 1). This construction



FIG. 1.—Pressed filament with welded supports.



FIG. 2.—Drawn wire filament with hook supports.



FIG. 3.—Mazda drawn wire filament with closed loop top supports.

was weak mechanically, hence the frequent fracture of the filament at or near the joint, which was not elastic. With the introduction by the British Thomson-Houston Company of a filament formed from one continuous length of drawn wire, these intermediate joints were no longer needed, the filament loops being supported by a "spider" consisting of hooked wires over which the wire was wound (fig. 2). This removed a great source of trouble, and by the absence of joints and the freedom at the supports, fewer filament breakages occurred, but it was possible for the filament to become dislodged by vibration. Finally, however, the hooked wire support was superseded by what is known as the "pig-tail" loop (fig. 3). a feature incorporated in Mazda lamps. The filament loops are passed into the "pig-tails," which, by their form, prevent the filament becoming detached, however violent may be the vibration to which the lamps may be subjected. Moreover, it provides a spring support that allows for expansion and contraction of the filament and for a limited freedom of movement within the coil of the "pig-tail." It is only a detail—nevertheless its introduction and the perfecting of the machinery to make it cost many hundreds of pounds. But it had a material bearing upon the life and strength of Mazda lamps, so it was added without extra cost to the user. Once again, it is the little things that count.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

DERBYSHIRE.

Matlock.—Six almshouses, Smedley Street West (£1,500).

DORSET.

Child Okeford.—The "Baker's Arms" Inn: alterations. Mr. G. Hunt, architect, Park Road, Blandford.

DURHAM.

Sunderland.—Two houses, Wellington Lane, for Mr. G. T. Brown.

ESSEX.

Barking.—Electricity Works: extension to buildings (£1,600).

Chelmsford.—Premises, High Street: extension, for Messrs. Luckin, Smith, Ltd.

Premises: extension for the Hoffmann Manufacturing Co.

Goodmayes.—Proposed St. Paul's Church.

Ilford.—Engine room (£870), for U.D.C.

West Thurrock.—Margarine factory, for Messrs. Jingens & Co.

KENT.

Walmscott.—Cottages for H.M. Admiralty employés. Messrs. Bridges & Clay, architects.

LANCASHIRE.

Aughton.—House, Prescot Road, near Trenchfield, for Mr. J. Prickett (of Warbreck Moor, Aintree).

Barrow-in-Furness.—Houses for Corporation employés.

Chorley.—Common Bank Works: proposed addition for the Chorley Bleaching Company.

Grindleton.—The "Buck" Inn: alterations.

Liverpool.—Picturedrome, Clayton Square, for Mr. L. Best.

Manchester.—Congregational Church, Withington; rebuilding.

Proposed Catholic school, Crowcroft, for 250 places.

MIDDLESEX.

Harlington.—House, Dawley Road. Messrs. F. & N. Wakeman, architects. 11 Adam Street, Adelphi, London, W.C.

Kensal Green.—Two cottages, Wellington Road: additions and alterations for Messrs. Chinchen & Co.

NORTHAMPTONSHIRE.

Scotswood.—Proposed St. Margaret's Church.

NOTTINGHAMSHIRE.

Sutton-in-Ashfield.—Proposed new P.M. Church.

SUSSEX.

Horsham.—The Carfax Theatre: addition. Mr. W. F. Pannett, contractor, Barrington Road.

WARWICKSHIRE.

Rugby.—No. 45 Hillmorton Road: additions for Mr. W. Wiggins.

Three houses, Park Road, for Messrs. G. W. & F. Varney.

WILTSHIRE.

Bedborough.—House for Mr. E. Tidball.

YORKSHIRE.

Doncaster.—W.M. school and chapel, Balby.

Pontefract.—The "Pineapple" Inn: re-building for Messrs. Carter's Brewery Co., Ltd., Knottingley.

Rawcliffe.—Power Station.

South Elmsall.—Four houses, Albion Street, for Mr. Waller.

South Kirkby.—Thirty-four houses. Messrs. Garside & Pennington, architects, Old Bank Chambers, Ropersgate. Messrs. Brook Lister & Co., Ltd., contractors, Slead House, Brighouse.

WALES.

Ystrad Mynach.—P.M. School hall.

SCOTLAND.

Buckie.—No. 28 Land Street: alterations for Mr. J. Hepburn.

Offices, Ianstown Slipway, for Messrs. James Jones & Son.

Glasgow.—Recreation Hall and rooms, Craigmont Drive, Maryhill, for Mr. J. Johnston and others.

Clydeside Ironworks: buildings, South Street, Scotstoun, for the Clyde Structural Iron Co., Ltd.

Works, Shuna Street: extension for the Cassel Cyanide Co., Ltd.

Inchcolm Works, James Street, Whiteinch: workshop, for Messrs. J. Broadfoot & Sons, Ltd.

IRELAND.

Bangor (Co. Down).—Villa, Ward Avenue. Mr. Thomas Houston, architect, King's Court, Wellington Place, Belfast (£1,200). Mr. R. J. McCallen, contractor, Devonshire Road, Holywood.

Belfast.—Five blocks of semi-detached villas, Cregagh. Mr. C. MacAlister, architect, Whitehall Buildings, Ann Street. Messrs. McIntyre Brothers, contractors, Carrington Street.

Five blocks of semi-detached villas, Cregagh. Same architect as last. Messrs. Kirkpatrick & White, contractors.

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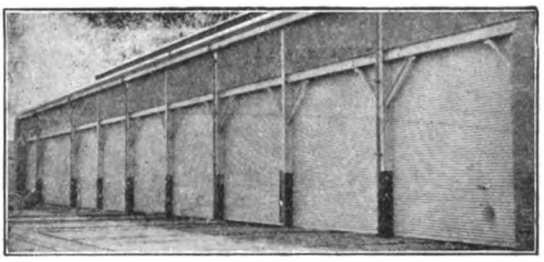
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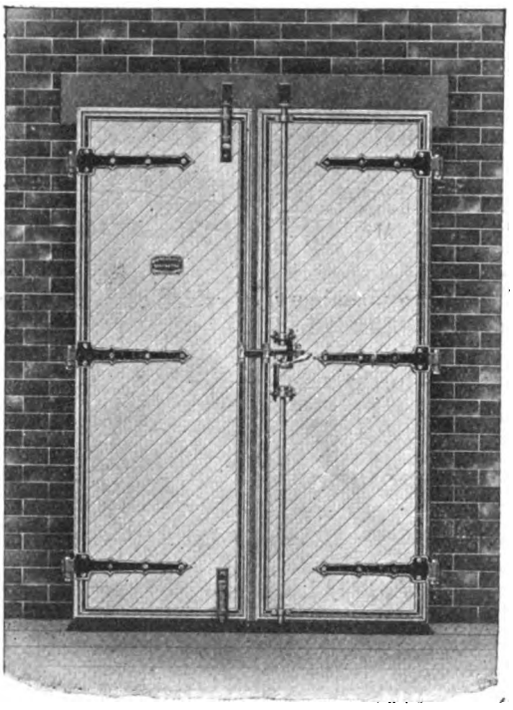
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THE ARCHITECT

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FORTHCOMING EVENTS.

Friday, April 14.

Town-Planning Institute : Paper entitled "Horizontality and Verticality in the Architectural Treatment of Town-Planning Schemes," by Mr. Barry Parker, F.R.I.B.A., at 6 P.M.

Tuesday, April 18.

Institution of Civil Engineers : Annual General Meeting of Corporate Members, at 5.30 P.M.

London Society : Paper entitled "The Development of London," at the Royal Society of Arts, by Mr. W. R. Davidge, F.S.I., at 5.30 P.M.

LINSEED OIL.

OF all the materials which obtain mention in an architect's specification there are few that receive so little attention in the supervision of work in execution as linseed oil. Specifications too often require that all the paint is to be mixed with "best linseed oil." Others, whose authors are acquainted with the fact that in the trade "best" linseed oil is not the highest quality, stipulate that "genuine" linseed oil is to be used. As very much of the satisfaction of an architect's clients is affected by the behaviour of the paint, it seems worth while to give some further consideration to the humble and neglected component, linseed oil.

There are few branches of the building trade in which indifferent and scamped work are more prevalent than the painter's, and much of the difference between good and bad work is due to the great variations in quality, and hence in durability, of paint that are possible in the vehicle. These variations are due, first, to the nature of the raw material from which the oil is expressed; second, to numerous alternatives that may be adopted in the preparation; third, to the degree of purity that is to be found in the finished product.

The property which gives linseed oil its special value as a vehicle in paint is that when exposed to the air it gradually dries and hardens into a solid substance, more or less transparent, somewhat elastic, and insoluble in water. This drying and hardening is the result of absorption from the atmosphere of a large quantity of oxygen, forming a body known as linoxyn, the final oxidation product of linseed oil when exposed to the air. The criterion of quality as a component of paint distinguishing various specimens of oil may be stated as the relative proportion of oxygen that each will absorb.

The raw material from which linseed oil is expressed is the seed of the flax plant, and the quality of the oil depends in the first instance on the source from which the seed is obtained. Baltic seed comes from Riga and other ports on the Baltic coast of Russia and is the seed of flax grown in the north of Russia; Black Sea seed comes from Odessa and other ports on the Black Sea and is grown in the south of Russia; American seed comes chiefly from the Argentine, and East India seed is exported from Calcutta and Bombay. The relative excellence of the oil obtained from these sources is denoted by the number of cubic centimetres of oxygen absorbed by one gramme of each, which is given as Baltic oil, 191; Black Sea oil, 186; American oil, 156; East Indian (Bombay), 130; Calcutta, 126.

The seed as imported is seldom free from dirt and other seeds, such as those of hemp and rape, the oils from which are very inferior in drying property to linseed. These seeds are usually smaller than linseed, and can therefore be separated by sieving, and the first variant of quality, due to manufacture, depends upon the thoroughness of this preliminary operation.

Oil is obtained from the seed by crushing and pressing, and in these operations there are again variations which affect the quality of the oil. The very best is the result of crushing and pressing cold, but commercial oil is nowadays practically always prepared by hot pressing, which is far more economical and secures a more thorough expression, though the oil contains a much larger proportion of mucilaginous matter, chlorophyll, &c., which impair its quality. Two systems of oil extraction are used, the English and the Anglo-American. These do not differ greatly, and their results do not materially vary in quality.

The oil, as it comes from the press, is known as raw or unrefined linseed oil. It is not clear and bright, but cloudy, and contains impurities detrimental to its employment as a paint component, and these must therefore be removed as far as possible to produce "refined linseed oil." Refining formerly was effected by exposing the oil to sunlight for some months in glass vessels or shallow tanks; but this method is slow and costly, and for commercial oil is now superseded by treatment with heat and sulphuric acid. The sun-refined oil is, however, undoubtedly much superior in quality, and for picture-painting should always be preferred.

High as is the capacity of raw linseed oil in its pure and natural state for drying by the absorption of oxygen, this capability can be increased by heating the oil to a temperature of 400° to 500° F. for a few hours, and still further by the addition of certain bodies known as "driers." Oil thus treated is described as boiled linseed oil. The boiling may be effected by direct action of fire upon the containing vessel or by steam heating, or boiled oil can be produced by chemical process, aided by moderate heat and the injection of air. By whatever method it is produced boiled oil is thicker and dries more rapidly than raw oil to a hard, lustrous coat. It is, however, usually darker in colour, and the extent of the darkening is in the fire-heating process determined by the degree of temperature and time expended on the operation. As for painter's use a light-coloured oil is usually preferable, the alternative methods have been introduced with the object of attaining this desideratum. A very satisfactory pale, quick-drying oil can be produced by the action of concentrated actinic light from Uviol lamps on raw oil kept at a temperature of about 180° F. whilst oxygen is passed through it in a fine stream. For the manufacture of enamel paints a very much thickened oil is prepared by keeping the raw linseed oil at a high temperature for a considerable time in the presence of air, but without the addition of driers—i.e. by boiling to excess, so to speak.

It will thus be seen that there are in the manufacture

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of linseed oil, whether raw or boiled, many operations which may be more or less carefully and skilfully performed, as well as variant methods which affect the result, so that manufacture as well as raw material is a determining factor of ultimate quality. In the preliminary process of manufacture it was shown that incomplete cleansing of the seed might entail the presence of inferior oils in the finished product. We are, however, subject to the possibility of inferior oils being also added as adulterants. Boiled oil is in addition open to substitution of many varied mixtures, some of which nearly approach good genuine oil in quality, though the majority are very inferior.

Adulterants of linseed oil are chiefly mineral and rosin oils. The latter is particularly objectionable by reason of a peculiar feature in its drying properties. It dries, but in the course of a few weeks the coat becomes soft and tacky again, and even if rosin oil is used for a bottom coat and good linseed oil paint laid over it the defect will make itself apparent. As the drying oils are highly complex organic substances, and their value as components of paint depends upon certain ill-defined and little understood properties, accurate valuation is a matter of some difficulty, and only to be attempted by expert oil chemists.

A simple test for the presence of rosin or of mineral oils in either raw or boiled linseed oil is to boil a small quantity with an alcoholic solution of caustic potash until it is completely saponified, then pour the solution into water; if the oil be pure, a clear mixture will be obtained; if it contains either of the oils named it will be cloudy and turbid.

The flash point is also a good test for detecting the adulteration of linseed oil with mineral or rosin oils. Linseed oil, whether raw or boiled, flashes at about 570° F. Mineral oils, such as are used for its adulteration, flash at from 380° to 420° F., and rosin oil at from 300° to 330° F.

As the value of an oil for use in paint depends very largely upon the extent to which it can absorb oxygen, it is fortunate that this can be determined by the amount of bromine or iodine that will combine with the oil to form derivatives, and this amount is expressed by what is termed the iodine value. This for linseed oil is 173-200, that of rosin oil is 28, and of mineral oil practically nil, whilst hemp, rape, and other usual accidental adulterants of lesser drying quality all have lower figures than linseed. If, therefore, a sample of drying oil has a low iodine value, it indicates a poor quality or adulteration with non-drying oil.

Those who wish to pursue still further their study of linseed oil, its qualities, manufacture, and adulteration, may be recommended to read Hurst & Heaton's book on painters' colours, oils and varnishes, the fifth edition * of which contains a thorough explanation of pigments, as well as oils and other vehicles, driers and varnishes used by the painter and decorator. In this text-book we have all that an architect and builder needs to know of the composition and manufacture of painters' materials, whilst the manufacturer may regard it as a valuable introduction to further study, the road to which is indicated by an excellent bibliographical index.

NOTES AND COMMENTS.

WE recently gave an account of the proposals of a Departmental Committee of the Board of Agriculture and Fisheries for the settlement of demobilised sailors and soldiers on the land, and we are glad to know that the Government have had under consideration the report of this Committee just issued, and while recognising that the recommendations made constitute a new departure in the policy of developing small holdings, have decided to give effect to them to the extent of setting up three colonies. Sanction will be sought from Parliament for acquiring the land and developing the colonies on the general lines recommended in the report, and the prospective settlers will be carefully selected from discharged sailors and soldiers by the Board of Agriculture, which will place its services at the disposal of the Statutory Pensions Committee in making provision in the colonies for a certain number of partially disabled men. Captain Charles Bathurst, M.P., has undertaken to devote his whole time to the work of organising these colonies, without remuneration, as war work; and, with the approval of the War Office, is vacating his appointment on the Staff of the Southern Command accordingly. Mr. Rowland Prothero, M.P., has also agreed to assist him and his officers with his advice.

Details of the scheme have not yet been finally drafted, but we understand that the three proposed colonies will each include about 2,000 acres of land. It is intended that two shall be of arable land, and the third of pasture land. They will be established in different parts of the country, though until the land has actually been acquired, the localities cannot be stated. The land will probably be purchased, and the settlers will take their holdings as tenants.

The recommendation of the Committee that the colonies should be run on a co-operative basis is also to be adopted. The plan suggested was that a depôt should be established in each colony for the collection and disposal of produce and a store for the sale of requirements. There will be a central telephone installation, which will enable the resident director to ascertain the best market on any particular day, and the conveyance of produce and sales will be conducted on communal lines.

The establishment of the three pioneer colonies is only a part of the scheme recommended by the Committee. It was stated in the report that the cost of three colonies was estimated to be not more than £334,020. The Committee suggested that the sum which should be appropriated for land settlement should in the first instance be £2,000,000, and that this amount should be charged on the Consolidated Fund and advanced from time to time in such instalments as may be required by the Board of Agriculture. Such a sum was believed to be sufficient to provide for at least four or five thousand families. It is unlikely, however, that the Government will proceed with the full scheme until the possibilities of home settlement have been tested by the experiment which Parliament is now to be asked to approve.

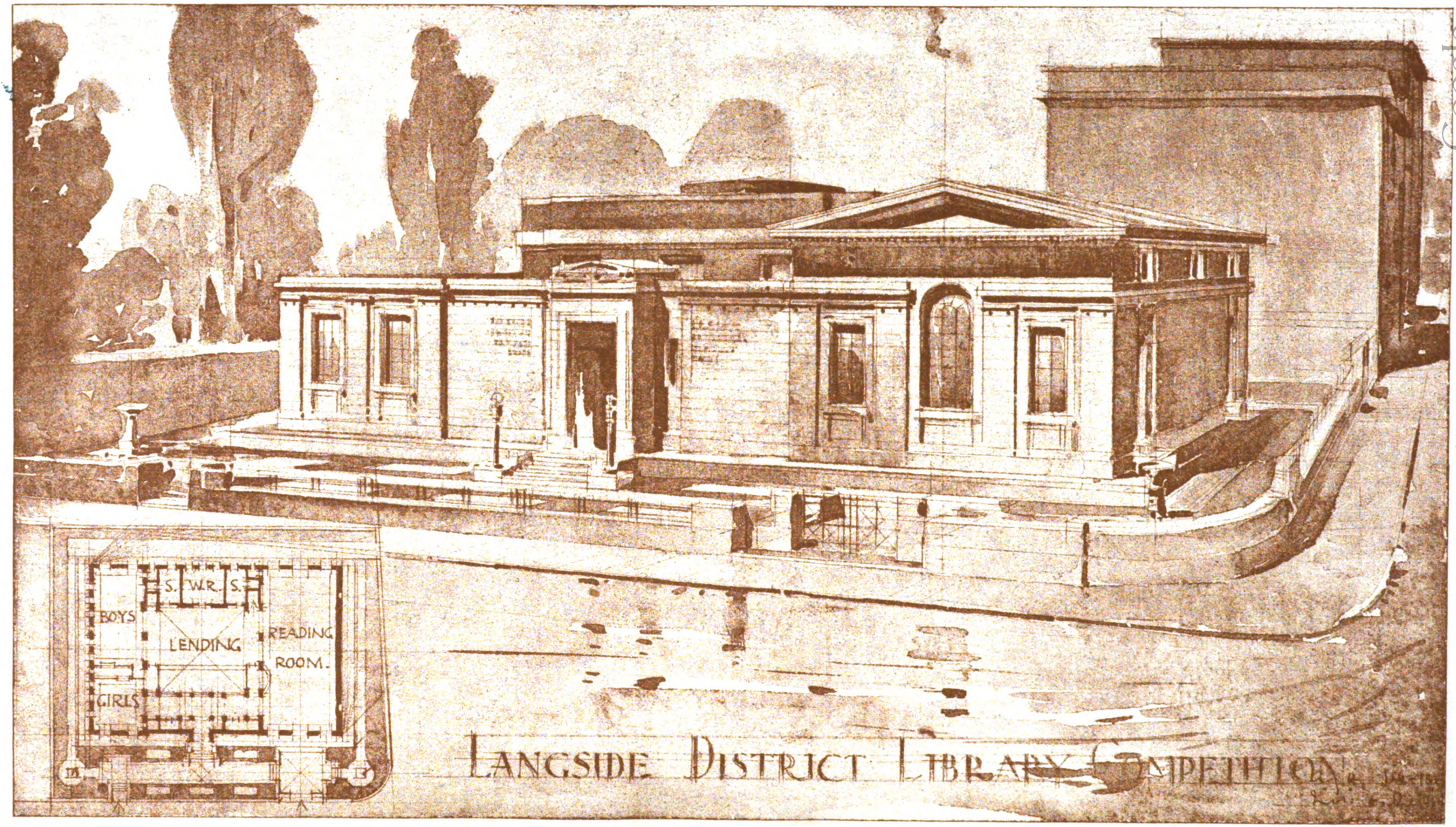
Another scheme for the benefit of those who have fought for us is in contemplation by the Scottish Veterans' Garden City Association, the object of which is to provide for the housing and care of permanently disabled soldiers and sailors. The Association has secured the feu of land at Longniddry, near Edinburgh, on which it is proposed to build. Plans have been prepared by Mr. M'Intyre Henry, Dean of Guild of Edinburgh.

The selected site is immediately to the east of the present village, on the north side of the main Edinburgh road, almost opposite Longniddry Station, and at the south-east end of the ground which is to be laid out on garden city lines by the proprietor, the Earl of Wemyss, in connection with the new golf links being formed between this ground and the sea. The present proposed scheme shows about six acres laid out in blocks of small houses. Only one-half of this, viz., about three acres, will be feued in the meantime.

On the second three acres, the Association will have an option for a certain period. The principal feature of the double site as laid out is a semi-elliptical crescent almost in the centre of the Edinburgh road frontage, enclosing an open public green. From this a short street leads into a circular roadway enclosing a smaller open space surrounding a group of fine old trees known as "The Laird's Garden," all that is left of an old-time garden which existed on the spot. The site will be

* "A Manual of Painters' Colours, Oils, and Varnishes. For Students and Practical Men." By George H. Hurst, F.C.S. Fifth edition, revised by Noel Heaton, B.Sc., F.C.S., with a chapter on Varnishes by M. B. Blackler, Ph.D. With numerous illustrations. (London: Charles Griffin & Co., Ltd. 10s. 6d. net.)

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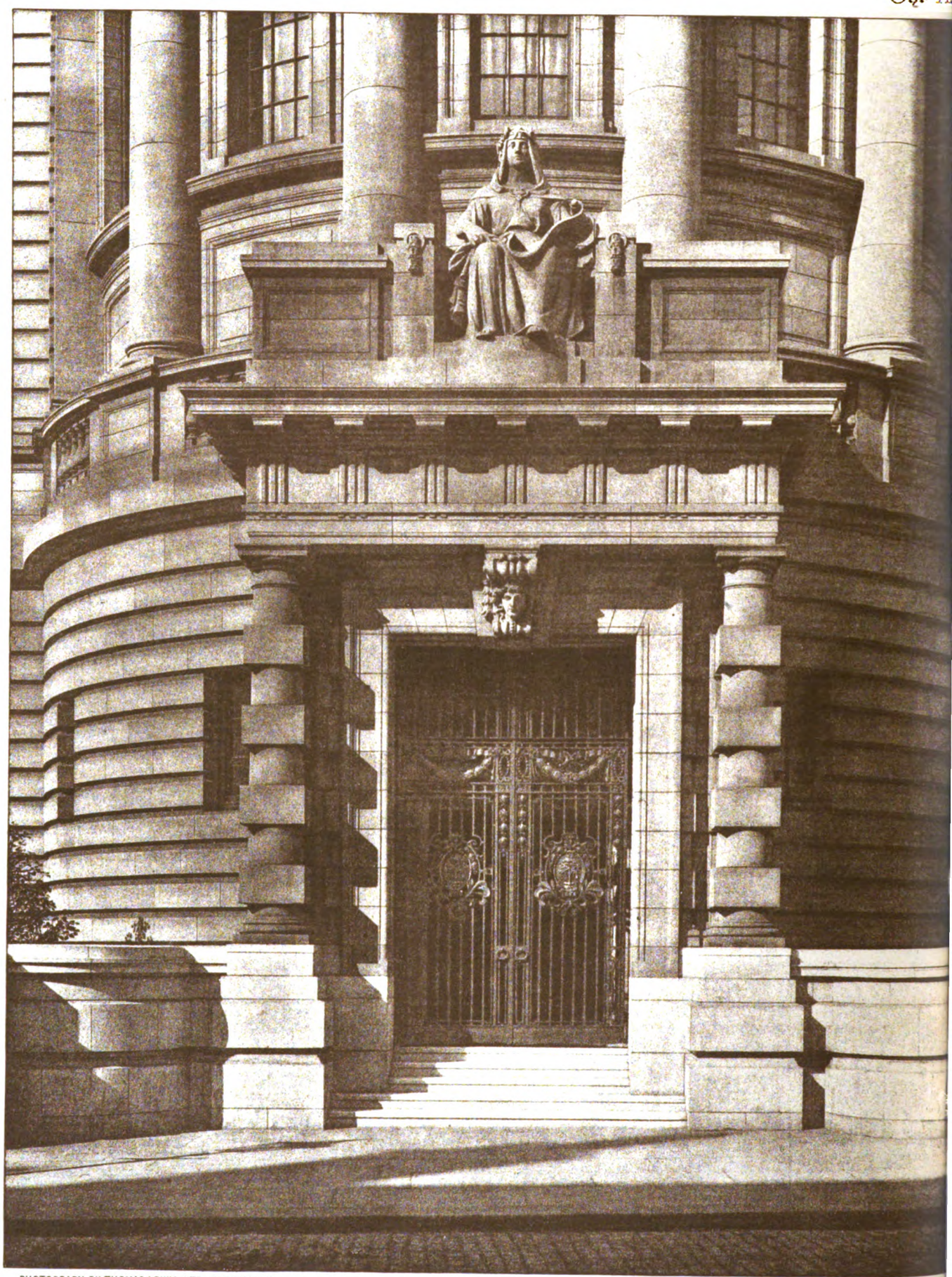


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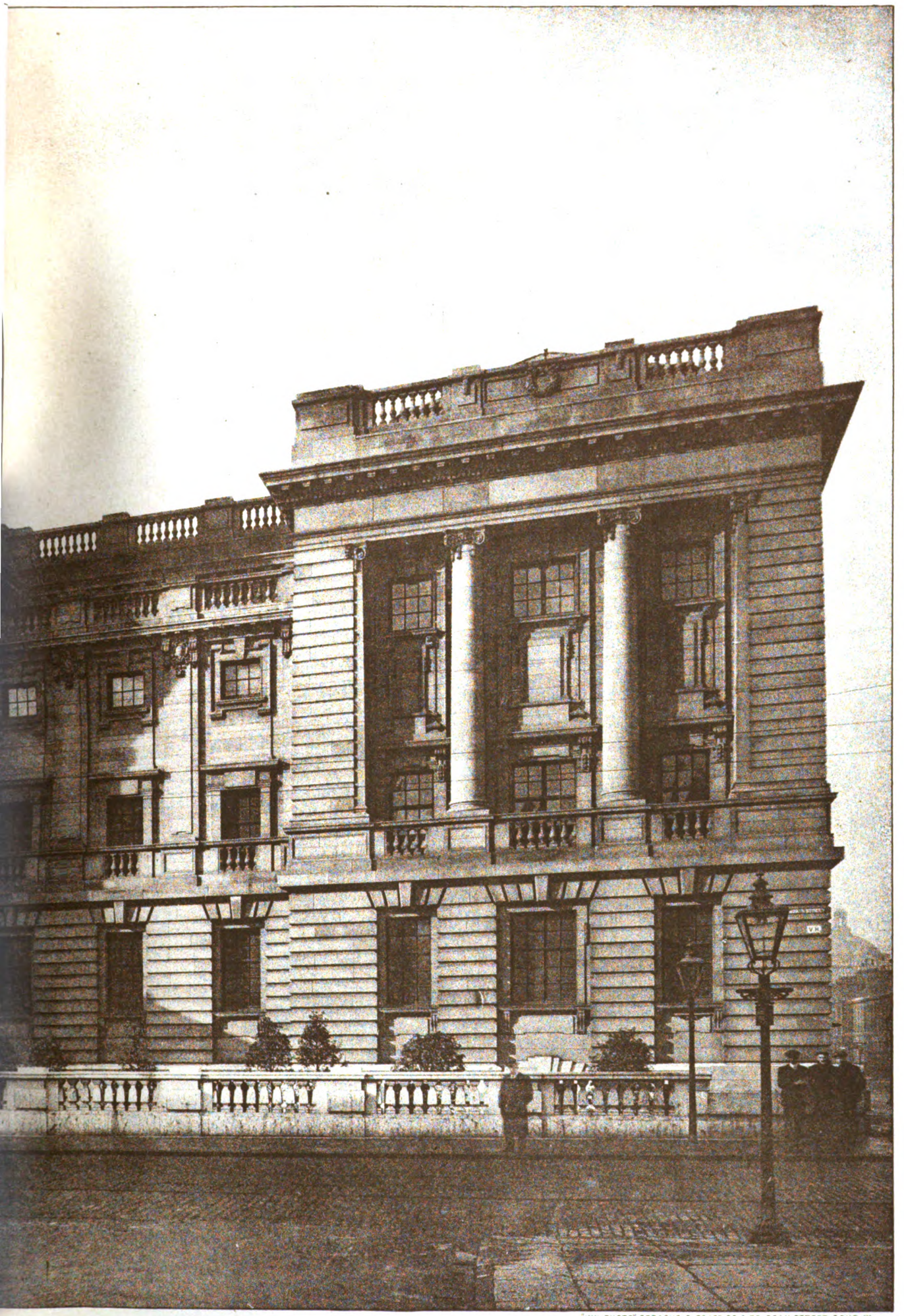
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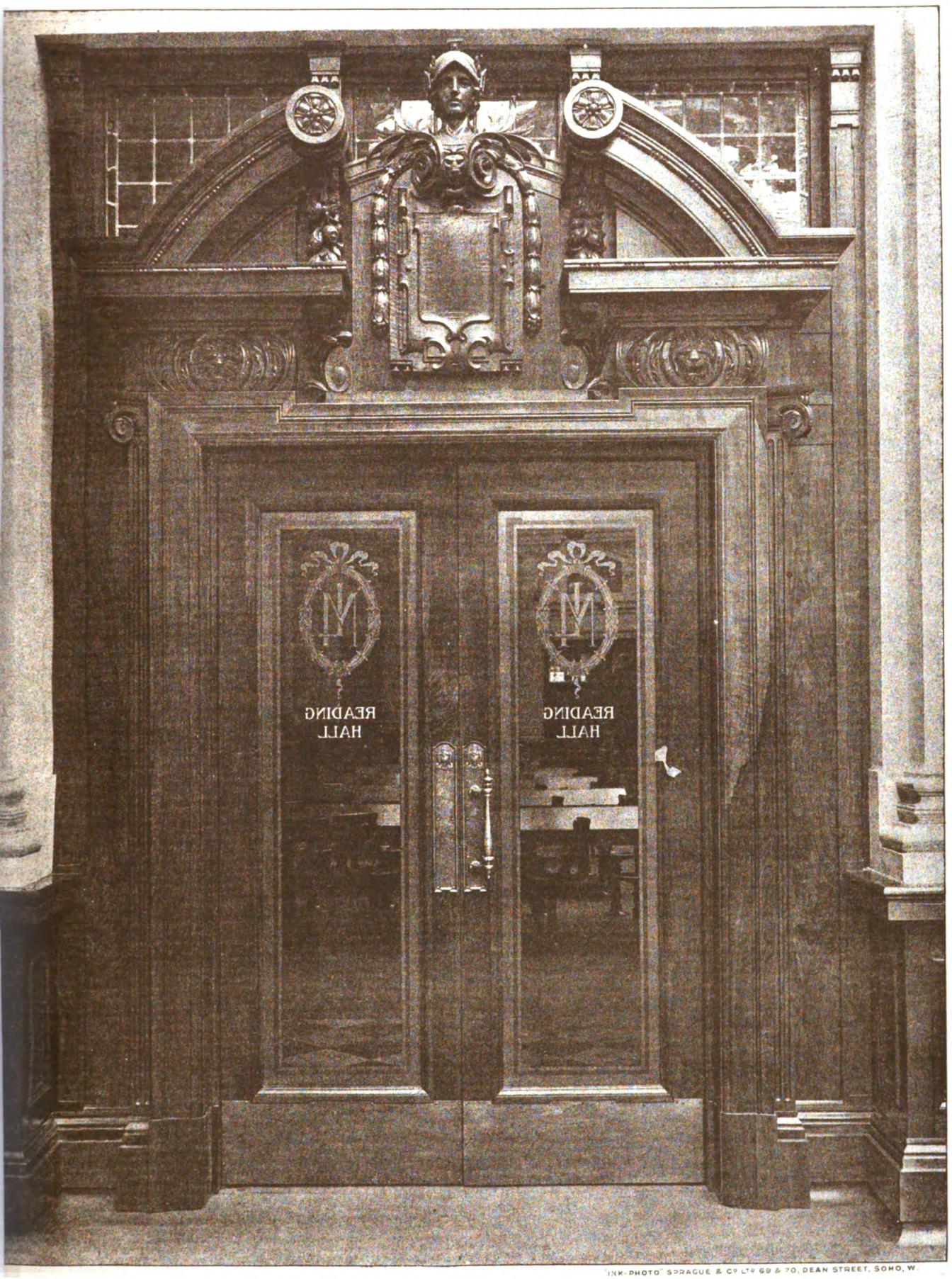
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bounded at the east end by the Edinburgh road to North Berwick, which runs alongside the policies of Gosford House. The site stands high, and the blocks of cottages are arranged so as to give some part of each of them a glimpse of the Forth and a share of the southern and western sunshine.

Most of the blocks consist of two houses each, but there will be a few blocks of three. The houses proposed will be of three sizes:— (a) one room, kitchen, scullery, and other necessary accommodation; (b) two rooms, kitchen, scullery, &c.; (c) three rooms, kitchen, scullery, &c. Great consideration has had to be given to the question of economising in the use of building materials, which have greatly increased in cost since the beginning of the war. The walls will therefore be built of two thicknesses of brick, with a hollow space between, thus securing dryness and equability of temperature at all seasons, and as a further protection against damp the exterior surface of the walls will be covered with cement harling, which will render them thoroughly waterproof. The rooms will be of reasonable dimensions and not mere boxes, such as are often seen in the small houses of garden cities. Some of the living rooms or kitchens, for example, will be 15 feet 6 inches by 11 feet, and 18 feet by 10 feet 6 inches.

Five different exterior designs of cottage architecture will be adopted in connection with the three types of houses, and further variety may be given by covering some of the roofs with slates and others with tiles. On the corner site at the east end of the crescent two shops, attached to two of the cottages, will be erected.

Part of the ground is reserved for the erection of small workshops and a public washhouse, and at the west end of the cottages a site is reserved outside of the garden city site for a public hall.

With reference to the notice which appeared on March 4 containing a list of certain woods covered by the Prohibition of Import (Paper, Tobacco, Furniture Woods, and Stones) Proclamation, 1916, the Board of Trade give notice that they have issued a general licence permitting the importation, notwithstanding anything in the Proclamation, of the following woods:—

Beefwood, boxwood, dogwood, greenheart, hickory, lancewood, lignum vitae, padouk, sabicu, and sandal wood. Although some of these are occasionally used in building, it is obvious that it is not for the sake of the industry with which we are more immediately concerned that the Government has made this concession.

The Board of Trade have sent us for the past three weeks a printed slip asking publication of the fact that the managing director of a firm of architects and builders' specialists is shortly proceeding to one of our Colonies, and desires to hear from one or two high-class British manufacturers desirous of opening up business in that particular Colony. We have from time to time made reference to the procedure of our Board of Trade. Perhaps our opinions of that particular Government Department have exhibited the fact that we have not, and still do not, entertain a high regard for the business capabilities of that Department; but why we should be asked to publish a free advertisement for the managing director in question we fail to understand; or why national money should be spent on behalf of any particular firm, however deserving, is possibly only to be understood by the Government official mind and not by us.

An appeal is being made in this country on behalf of the Fraternité des Artistes to assist the funds of this society by promoting the sale of the "Album National de la Guerre," published under its distinguished patronage. The appeal is supported by Queen Alexandra, M. Paul Cambon, Sir E. J. Poynter, Mr. Alfred Parsons, and Sir J. D. Linton, Presidents respectively of the Royal Academy, the Royal Society of Painters in Water Colour, and the Royal Institute of Painters in Water Colour, as well as by other ladies and gentlemen eminent in art and society.

The purpose of the Fraternité des Artistes is eloquently set forth by M. Léon Bonnat, the famous French artist. It was founded to help those who are suffering in the tragedy which is shaking the whole of Europe, to help particularly the families of the artists who have fought and are still fighting for France against the Barbarian. The task, M. Bonnat says, is heavy and will be of long duration, but he hopes it will be facilitated by the ready reception of the "Album" which the Fraternité offers to the public. The most notable artists of France have worked for it with all their heart and talent, without distinction of schools or tendencies, their one ideal to serve art and charity. Messrs. Thomas Agnew & Sons have consented to receive orders for this splendid "Album," and copies of it can be seen at 43 Old Bond Street.

The Royal Drawing Society has again opened an exhibition—at the Guildhall Art Gallery—of children's work, showing the value of the powers of observation, memory, individuality, and imagination which the efforts of the Society tend to develop.

There are many lessons for older artists in the work of the children, whose ages range from three years to nineteen years. In the best sketches there is a fresh vision of all things that interested the youngsters, and there are subtleties of expression and new if unconscious understanding which might have escaped older eyes and sophisticated minds.

With the object of helping artists during a time of exceptional difficulty, the Governors of the Whitworth Institute, Manchester, have opened an exhibition of water-colours by living artists, to take the place of that abandoned by the Manchester City Art Gallery. It will remain open for seven weeks.

Among the artists who responded to invitations to contribute are Mr. Wilson Steer, Mr. Muirhead Bone, Mr. W. Orpen, Mr. Frank Brangwyn, Mr. Walter Sickert, and Mr. George Clausen.

We may draw attention to the memorandum of the British Fire Prevention Committee, which we give elsewhere, on the use of sawdust, with or without carbonate of soda, as a means of extinguishing small fires of burning petrol and other inflammable liquids, which are not satisfactorily to be quenched by water.

ILLUSTRATIONS.

MITCHELL LIBRARY, GLASGOW.

This is the largest public reference library in Scotland, and was erected from the designs of Mr. William B. Whitie, F.R.I.B.A.

Although the illustrations indicate the character of the work, a few descriptive details may be of interest. Dealing with the exterior, the basement storey and balustrading are carried out in fine granite obtained from Creetown quarry. The upper storeys are of polished freestone from Blackpasture quarry. Surmounting the dome is a bronze figure, the work of Mr. Thomas J. Clapperton, of Chelsea, and over the entrance in the central portion of the principal façade is a carved seated figure, executed by Mr. Johan Miller, of London, and late of Glasgow.

There is some excellent carving and ornamental leaded glass work in the lofty public rooms; but, as yet, no panelling has been carried out for the walls, which are lined with marble. The book cases throughout are of mahogany. The reading-hall, with its barrel-vaulted, leaded-glass roof, supported by massive ribs, enriched

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with ornamental plaster, is one of the most striking parts of the interior. Here the finishings and fittings are of Italian walnut. The floor is laid with oak wood blocks, these being also used for the ladies' and students' rooms. Both these latter apartments have Tobasco mahogany finishings and fittings. In the corridor a marble panelling treatment has been adopted for the walls. The floor is laid with rubber squares with marble borders.

A large number of contractors were employed. Some of the Glasgow firms were as follows: Mr. John Cochrane, joinery, carpentry, fittings for principal rooms, and wood carving; Messrs. Galbraith & Winton, 185 Saint Vincent Street, marble wall linings and paving; Messrs. P. & W. Anderson, Ltd., 64 Douglas Street, masonry and brick work; Messrs. Val de Travers Asphalte Paving Co., Ltd., asphalte work; fireproof flooring, Messrs. Melville, Dundas & Whitson, 93 West George Street; Messrs. Wylie & Lockhead, Ltd., mahogany bookcases; ornamental leaded glass in rooflights, windows, doors, and screens, by Messrs. William Meikle & Sons, 19 Wellington Street; patent roof glazing, Messrs. The Pennycook Glazing Co., Ltd., 11 West Regent Street; principal staircase in Monk's Park stone, by Mr. William Vickers, 221 West Regent Street, and supplied by Messrs. Bath & Portland Stone Firms, Ltd., Bath; steel work, Messrs. A. & J. Main & Co., Ltd., Springburn; spiral staircase, Messrs. Walter Macfarlane & Co., Possilpark; sanitary fittings, Messrs. Twyfords, Ltd., 95 Bath Street; heating and ventilation, Messrs. Ashwell & Nisbet, Ltd., 233 Saint Vincent Street; electric lighting, cooking appliances, and heating installation, Messrs. Allan, Arthur & Ure, 192A Saint Vincent Street; entrance gate, hoist enclosures, and stair railing, Mr. David M. Tyre, Bridgeton; metal sashes, Messrs. Fred. Barby & Co., Ltd., Petershill Road.

Other contractors employed were: Messrs. Charles Smith, Sons & Co., Ltd., Diritend Bridge Works, Birmingham, door handles; Messrs. J. W. Singer & Sons, Frome, and Spital & Clark, Birmingham, electric light fittings; Messrs. Tonks, Ltd., 201 Moseley Street, Birmingham, did the adjustable fittings for shelves; weather bars, Mr. Robert Adams, 3-5 Emerald Street, London, W.C.

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—XV.

By Charles T. Ruthen, Licentiate R.I.B.A., M.S.A.

It is difficult to describe the first emotions awakened in the traveller on his arrival at Venice.

Emerging from the musty, dusty railway carriage, after the journey of about twenty-three miles from Padua, into the bustling, noisy, crowded Stazione Ferroviaria, and thence out upon the bank of the Grand Canal, with the crowds of gesticulating boatmen excitedly pressing the advantages of their particular gondola upon the traveller, provides a change so overpowering and so amazing as to defy description. Selecting one of the gondolas, the Grand Canal is crossed, and endless narrow waterways silently negotiated, until the Grand Canal is again entered. In crossing this broad waterway for the second time, the main arterial roadway of the city, a splendid view is provided of the Rialto spanning the Canal from side to side. This view lasts for only a few minutes, and then further narrow grimy water-slums are entered, and very soon the gondola is drawn up in the Rio dei Baccaroli, alongside the entrance steps of the Grand Hôtel d'Italie, in the Campo San Moisè, with its garden-terrace overlooking the Canale di S. Marco, and situate on the very edge of the Grand Canal. Some most magnificent picture-scenes are provided from this terrace, including the church of Santa Maria della Salute, the Dogana di Mare, with the Ponta della Salute immediately opposite and across the Canale di S. Marco, the Isola di S. Giorgio Maggiore, and the church of S. Giorgio Maggiore, two of the most delightful pictures imaginable.

It must be frankly admitted that an effort is required on the part of the lover of the beautiful in art to prevent the mind, as it were, losing its footing. An extreme effort is required to appreciate the reality of the place, and to overcome the impression, sometimes forced upon one's mind, that it is not a spectacular illusion which has, by some miracle, sprung up from the waters of the lagoons.



VIEW OF VENICE, ENTERING FROM THE SEA.

The suggestion that the whole thing is just a haunting dream lives with one in Venice, and becomes more substantial only in later days when the place has to be left.

Entering Venice from the other side—that is by what one can only term the grand entrance, afterwards mentioned as the front entrance, that is, from the Lido—the city appears like some gorgeously arrayed phantom arising majestically out of the expansive waters of the sea, like some unreal dream-city, an architectural mirage, challenging comparison and defying description.

The fascination of Venice is such that one is filled with a kind of infinite wonder at the works created by those old Venetians, and in the stay within its precincts there exists the consciousness of close contact with the Venice of history, with all the splendour and pageantry of its ancient age, the magnificence and abundance of her art, and her commercial struggles, failures, and successes of the centuries.

The headquarters selected by the writer, and mentioned above, would be difficult to surpass, so conveniently and pleasantly are they situate. One is provided with almost all one could wish for a pleasant study of the beauties of this wonderful city, and further with two extras, which even the architect, used as he is to such things in ordinary everyday life, would rather omit from his final catalogue containing such a schedule of monuments and glories.

There are, nevertheless, two extras which must be included in the final account of the incidents connected with this tour, extras, according to the considered opinion of people unacquainted with human limitations of the members of the honourable profession of architecture, so dear to the heart of all architects, when making out other and more prosaical accounts, which, under no circumstances, should be omitted. Extras unpaid for and undesired, but nevertheless of no mean quality and

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quantity, cheerfully, however, put up with, and perhaps tending to add to the novelty of the holiday. These extras named hereafter are necessary essentials to such a trip as the one under notice, and if at times disagreeable and uncomfortable, yet adding that tinge of strangeness and originality so characteristic of such foreign travels.

The insignificant but numerous and active mosquito, one's constant and extremely attentive companion by day and by night, more especially the latter; and the pungent and lasting effluvia given off from the waters of the canals, rendering their presence ever strongly evident, and especially noticeable when breakfast is taken upon the terrace overlooking the Grand Canal. It may be said with much honesty that these extras were, like most "extras," unforeseen; but unlike other extras so well known in the architect's office, they attack the architect as well as other people, and are therefore much more highly appreciated, and consequently more highly appraised.

It may be mentioned that in the case of the first named, it can truly be said that "after attachment" the object "attacked" increases greatly in bulk, if uncomfortably so. In the case of the latter "extra," the very rapid passage of the petrol launches, now much used for traversing the waterways, gives an extra vehement stirring up to these quiet silent waters, and thereby adds to the already sufficiently spicy flavour of the odour caused by the disagreeable exhalations.

Sitting in front of the hotel after an enjoyable and much appreciated dinner, there comes the desire to read, within sight of the silent waters of the Grand Canal, with its endless procession of gondolas, its sparkling reflections, and its gorgeous surroundings of white palace walls and the domes of Santa Maria della Salute adding to the beauty of the scene, something of the history of this



THE RIALTO OVER THE GRAND CANAL, VENICE, SHOWING AN ITALIAN AIRSHIP IN THE DISTANCE.

wonderful place. After Attila and his Huns invaded Italy in 453 and destroyed Padua and Altinium, the people took refuge on the islands of the lagoons, Murano, Chioggia, Grado, Malamocco, and particularly Torcello, which latter place was then built. Later, in 568, a further invasion took place, and the destruction carried out in 453 was completed by the German tribe known as the Lombards. The mainland from that time became known as Lombardy, and what remained of the early Veneti built their towns upon the little islands of Rivoalto, Malamocco, and Torcello, which owing to the shallow waters were practically immune from attack.

The group of islands upon which the Venice of to-day stands originally bore the name of Rivoalto or Rialto, these islands being considered in 811 to be best situated to withstand attack from the enemies of the city. The seat of government was here founded and the future of the present famous city was established. Paulucius Anafestus was in 697 selected as first Doge, with the seat of government at Heracles or Torcello. About fifty years later this was, however, moved to Malamocco, which island does not now exist, having been claimed by the waters of the lagoons. In 809 circumstances rendered necessary the movement of the much-troubled people to Rivoalto, and from then commenced the building of Venice. The first Doge whose residence it is recorded occupied the site of the existing Palace of the Doges was Agnellus Partecipatius. Round about this site is the real centre of the city, although the oldest part is near the bridge known as the Rialto (the name by which Venice was known for generations).

So much for the early history of Venice. Now Doge Enrico Dondalo laid the foundation of the great eastern supremacy of Venice, due to his conquest of Constantinople in 1204, an event of great consequence and importance to the city of Venice, which by this event took possession of a number of places on the coast of the Ægean sea and most of the Greek islands.

The greatness of Venice dates from this period. Its ships were the chief carriers betweeen east and west. The wealth of the plains of Lombardy was exported, and timber and stone from Istria and Dalmatia, and manufactured goods from Constantinople, wines from the Greek islands, and the rich silks and other goods from Egypt, Arabia, and Bagdad imported.

During the centuries intervening between 1204 and the fifteenth century, the history of this city is full of stirring episodes, covering the rise of the class of nobles and their part in the government—the violent conflicts with the Genoese, who were finally defeated by Doge Andrea Dondalo in 1352; the alliance of Genoa, Naples, Hungary, the Scaligers of Verona and others against Venice, and the peace which followed; the defeat of the Turks at Gallipoli in 1416 by the Venetian fleet under Loredan (a very interesting piece of history, when considered in relation to the events at the same place in 1915), and in 1421 the subjection of all the towns on the Dalmatian coast, when Venice held the entire coast excepting Trieste, from the estuary of the Po to the island of Corfu. The zenith of the glory of Venice was witnessed in the fifteenth century, when the inhabitants numbered 200,000. It possessed what in those days was considered a huge fleet of merchant craft, some 300 sea-going vessels, and 3,000 smaller craft. In addition, its "mighty battle fleet" consisted of forty-five galleys and 11,000 men, with which the city maintained the supremacy of the Republic.

Venice, in the fifteenth century, it is said, as evidence of its great prosperity and high position among the nations of the world, shared with Genoa the reputation of being the leading slave market in Italy, and rivalled Bruges as the focus of the commerce of Europe.

In addition, as evidence of the appreciation of the peoples of those times, it is recorded that Venice was universally respected and admired. The Turks, however, in 1453 recaptured Constantinople, and thereby the supremacy of Venice in the East was undermined. Other circumstances, including the discovery of a new sea route to India at the end of the fifteenth century, benefiting Portugal at the expense of Venice, combined to seriously affect her prestige and commerce.

From the opening of the sixteenth century the fortunes of Venice underwent many changes, mostly to her disadvantage, and the prominence of the place continually declined to the French Revolution. Venice repeatedly rejecting Buonaparte's proposals of alliance, he took pos-

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session of the city in May 1797, and the last Doge, Lodovico Manin, abdicated. Austria then came into possession of Venetia in 1797 by the peace of Campo Formio. Venetia became part of the kingdom of Italy by the peace of 1805, and came under Austria again in 1814.

In 1848 a Republic of Venice was declared under Daniele Manin as president, and afterwards a siege which lasted fifteen months ended in Venice being taken by Radetzky in 1849. The war of 1866 eventually led to Venetia being joined to the kingdom of Italy.

It has been said that those who visit Venice and arrive, as did the writer, by train over the Laguna Veneta, enter the city by the back door, the front entrance being planned for those who come by sea, truly a magnificent portal to such a stately city. Sailing towards Venice from the Lido, a sight of indescribable splendour is presented. The magnificent campanile of San Marco



ONE OF THE SECONDARY CANALS OF VENICE

standing out in all its nobility, majestically demanding as it were the admiration of the traveller, with the Piazza, the Piazzetta, the shining domes of St. Mark, the imposing and gorgeous façade of the Doge's Palace, together with the domes of Santa Maria della Salute, and the white pile of San Giorgio Maggiore, such is the front entrance to the architect's dream-city. There is in the whole scheme a wonderful picture-like effect, with the oriental touch produced by the gilded domes of St. Mark.

The entrance at the rear is made across the lagoons, a large basin covering a huge area, some 184 square miles, consisting of shoal banks cut up in all directions by deep channels. A study of the map will disclose the strange formation of this area, something like a segment of a circle, the curve of which follows the mainland. The two ends of the curve are joined by practically a straight line, called the Litorale di Pellestrina and the Litorale di Lido, a narrow strip of land composed of a number of long narrow islands, or lidi, shutting out the Adriatic from the lagoons.

The lagoons are connected with the Adriatic by four entrances, Porto dei Tre Porti, Porto di Lido, Porto di Malamocco, and Porto di Chioggia. The lagoon-vive, that is, the portion or portions of the lagoons affected by the ebb and flow of the tide, at Venice is about five miles wide. At high water, stakes projecting out of the water indicate the navigable channels surrounding the city; at low water very many of the mud banks are to be seen above the water level. In winter, spring tides, when accompanied by strong east winds, cause the level of these water areas to increase by sometimes as much as 10 ft. The Piazza di San Marco, which is only 16½ in. above sea level, is then flooded, and the gondolas may be seen wending their way round the square and its vicinity. The lagoons also consist of the lagune-morte, being those portions completely cut off from the sea and subject to malarious exhalations. The lagoons are like a great lake, but although the appearance of this huge sheet of water would lead one to believe that it is navigable in all directions, yet this is not so, for even at high tide there are very many places so shallow that only three inches of water cover many of the shoals, which at low water are left quite bare.

The Venetians secured the Laguna Veneta against further alluvial deposits by the alteration of the course of the river Brenta, and by the building of huge dykes at the narrowest places of the lidi. But for the lidi, which is not more than half a mile wide, the lagoons would cease to exist and the water surface would become part of the Adriatic, the shore of which would become the mainland. In the latter event it is certain that very quickly Venice would also cease to exist, for then the city would be subjected to the full force of the Adriatic. Several times the sea has burst through the frail barrier of sandy dune and threatened the city, and works of fortification were constructed on the lidi at its weakest points, such as the Murazzi, a strong bulwark or sea-wall of masonry, constructed of Istrian stone in 1716-51 (one of the last great efforts of the Republic), and of a thickness of 40 to 50 feet, descending towards the sea in four terraces.

A study of the lagoons and the effect of the lidi upon them, their nature and effect upon the city of Venice, is an extremely interesting subject. They are not a semi-stagnant marsh, but a continuously active water basin, the tides of which, fed from the Adriatic twice a day, flood the basin and sweep through the water-streets of this ancient city, performing a cleansing process around her ancient walls.

The study of the history of art in connection with Venice is a great subject, opening with the striking fact of her independence in this particular direction from the mainland, equally as striking in art as her isolation from the mainland in situation and political history.

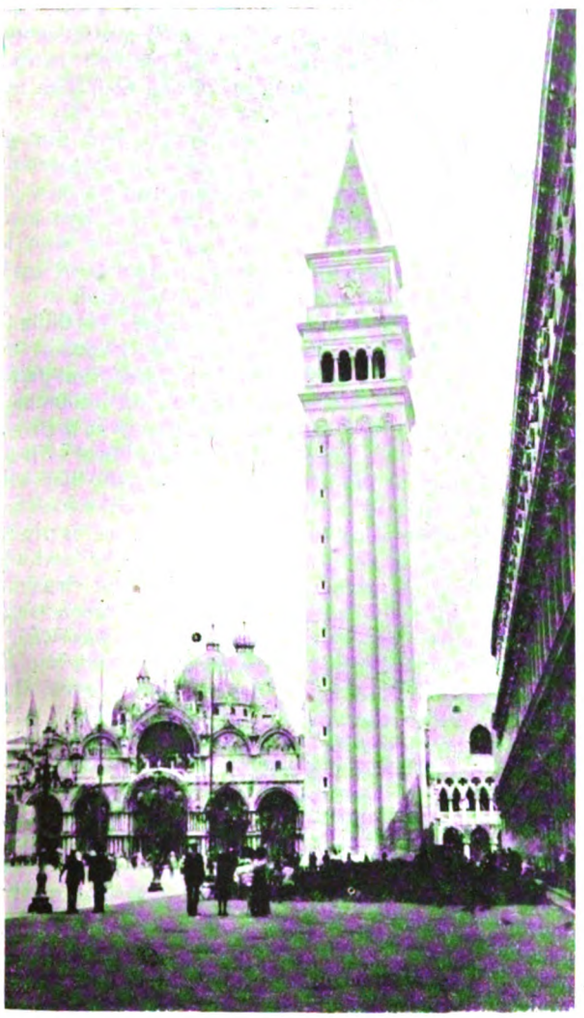
Having seen Venice for the first time the traveller is to no little extent amazed, after the study of other parts of Italy, at this wonderful isolation.

The examples of the Romanesque period abundantly scattered about this city immediately betray the fact that her prosperity and prominence, not to say her glory, were founded upon her immense early oriental commercial connections.

The Venetian Republic, down to the date of the French Revolution, was, it is very important to definitely note, the only part of Western Europe which at no time formed a portion of the Teutonic Empire, or any part thereof. Its important position as the portal between the east and west created a very deep impression upon the architecture and arts of this Republic. The close association of the city with the Byzantine part of the world was long and harmonious, and thus that Oriental character appears in most of its early buildings and works. All the traditions of the Empire of the Romans were continued, and alone amongst all other parts of Western Europe this Republic remained free from, and unfettered by, Teutonic

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adulteration. The wonderful church of St. Mark is in the Byzantine style, based, it is supposed, upon that famous edifice, St. Sophia, in Constantinople, and there are ancient mosaics bearing very distinctly and unmistakably the impress of this Byzantine period. In other branches of art the same style is traceable.



PIAZZA DI SAN MARCO, VENICE, SHOWING THE CHURCH OF ST. MARK AND THE CAMPANILE.

Venice has, in the centuries gone by, been converted into a kind of receptacle, as it were, for an amazing collection of imported works of art from the Greek churches and elsewhere, and has therefore become a veritable museum of antiquities. In this way, and, in addition, the influence of Cairo, Syria, and Asia Minor, there is that very decided Oriental tone existing in many of the older portions of Venice. The Venetians, even during the Gothic period of art, differed in their style from the other parts of Italy, although in church architecture, perhaps, the difference is less pronounced; yet the chief Gothic buildings, the Venetian palaces, bear the impress of greater individuality. The chief monuments in this latter category are the more ancient parts of the Doge's Palace, and others upon the Grand Canal. The Renaissance style was adopted in the last portion of the fifteenth century, and was highly cultivated by the Venetians.

(To be continued.)

Professor Shelley, of University College, Southampton, lecturing in York on Monday last on "Education after the War," said that it was the condition of modern school life and not the teacher which was wrong. There must be a return to nature in developing child-life. The greatest obstacle to progress to-day was the gorgeous school building and apparatus. We had admirably fitted the prison to the child and had invented means for keeping children quiet in mathematically adjusted desks at a time of life when the greatest need was activity.

LANDSCAPE PAINTING.*

By H. Hughes-Stanton, A.R.A., R.W.S.

Landscape art is modern in comparison to plastic and decorative art and portrait painting. In the beginning art was an expression of feeling for decoration which sprang from the most primitive aspirations. Before there were such things even as houses, men felt the want and desire for decoration; in the most simple way, at first with curves and lines, and later with crudely expressed representations of animals and birds, these early artists adorned the walls of their caves. From the quaint archaic sculptures decorating the Early Parthenon follows the great period of the Marbles at Olympia, and, later, the still greater Parthenon Marbles by Phidias. These were followed by the Roman school, which had its beginnings in Greek Art.

In Italy a great school of decoration arose, and it was in the Italian Renaissance that it reached to a supreme height. Italy spread her art glamours over the world, but it is interesting to note that oil painting is said to have had its beginning in Flanders. Some of the landscapes in the backgrounds by the Early Florentines are very interesting, and are the first beginnings of landscape art. The backgrounds to subjects were always formal and made subservient to them; they had conventions of colour and form, and for a long period became quite traditional and of much similarity of idea. It is very interesting to note how men made these careful studies of their impressions of nature, wrought out in the most painstaking way and with the utmost decorative conception. This was the beginning of landscape art, and it was not until the Dutch began to specialise and the easel picture began to be acquired and encouraged, that landscape art became a real thing, and truth and beauty of atmosphere were understood and sought for.

Much of the Early Dutch, Flemish, and French art is fine and makes the slow progress through tradition to the modern school. England with Turner, Wilson, and Constable, and France with the Barbazon painters, imparted a new impetus to throw off many conventions, and gave us nature touched with a strong personality of feeling, thought, and poetry, and with a great sense of atmosphere.

Landscape art being the youngest of the arts has made progress always, and, even in our own time, has given much new observation and beauty unseen by former generations. In fact, landscape is such a great field for the artist to attack that there is always new scope for a man of gifts to give to the world some fresh observation or aspect. The observation of light is understood by modern painters more than the old, and this is perhaps only natural, or we should be standing still, and I do not think we are. It is by the striving and progress of each decade and the assimilating of the work of previous schools of painters that new views are opened to the world. Unfortunately, a period is only ripe to accept a fully-established art; this is why painters who have been dead for years are discovered to be great, whilst others yet alive are striving for a new generation, a new understanding of new ideas that for the time being are too near to be appreciated at their worth. I believe it is so now, and feel there is much that will live and give joy to another generation that is taken to-day as mediocre, and criticised very freely and with a great degree of natural prejudice because it is of our own time, and we have fixed ideas of what is great in the past. Everything becomes old, there is no greatness in that; this is the cult of the antiquary!

Among the Early Italians of the Florentine and Venetian schools I will casually mention Filippo Lippi, Bellini, Botticelli, Fra Angelo, and Gozzoli, all of whom have very beautiful and noble backgrounds to their figure subjects. Georgione, the Venetian, a superb colourist and designer, must be considered a more truly

* From a Lecture delivered at Carpenters' Hall.

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landscape painter in that he made fine and seriously studied landscape compositions from nature for his figure subjects. Titian, however, although he is especially a great decorative and figure painter, must be considered the first great landscape painter. The nobility of his style, and even the expression of the drawing of his trees and skies, and the massing of light and shade and general lines of his compositions created a school which affected all landscape art for many years after him.

The Italian school, although it affected the beginnings of landscape, produced no pure landscape painters except two gifted artists, Canalleto and Guardi, who devoted themselves to architectural subjects. But Italy became the inspiration of great painters who arose in Europe, who made landscape a new field and special branch of art. It is to the Flemish school we now turn for a fresh impetus. As with the Early Italians, the Early Flemish painters used very interesting and beautiful landscape in their figure compositions, with great wealth of detail, carried out with close observation and studies from nature. Albert Durer, the Early German painter, must certainly be spoken of as a most important figure in landscape. His drawings and studies, his beautiful, majestic, and noble compositions, the details of which are most convincingly studied, make him most noteworthy. Among the Early Flemish painters, the brothers Van Eyck, Memling, Marbeuse, David, Pattener, and Roger Van der Weyden all used landscape as a very important part of their compositions, many portions of their pictures representing carefully collected notes of nature used in a most decorative sense.

I consider Rubens, however, the first real painter of the pure landscape school. He gave us many very fine works in this branch, which was at that time quite a new departure. His landscapes have a stricter perception of lighting and truth than any work that had gone before; he painted effects of sunrise and sunset, storm and sunshine, making the landscape effect the real motive of his picture. History relates it was his ambition in late life to retire to his estate, there to end his days in peace, painting landscape for the real love of it.

Among other early painters in Flanders Peter Breugil was one of the earliest to treat landscape from a naturalistic standpoint, and studied the effects of the different seasons. His son Jan carried landscape tradition still further, though his work is not so interesting—as also did Paul Brill who was one of the very first we can regard as a pure landscape painter. With these one might say a real landscape school was founded.

As in Italy and Flanders, the Early French primitifs used landscape as an accessory in their compositions, and we find much interesting work in this branch of their pictures. It is to Nicholas Poussin that we look as the first pure landscape painter who was to carry France into the forefront of landscape art at the beginning of the seventeenth century. He was born at Les Andeleys on the Seine, a beautiful spot that has always been the haunt of the painter. He migrated to Italy, and it was to this country that he owed his training, and where he acquired his inspiration. His work was influenced greatly by his utter sympathy and appreciation of the work of Titian no doubt. He was a fine colourist, and had a great feeling for composition, and his art upholds the greatness of the classic school to which he belongs. He was followed by his nephew Gaspar Poussin or Donget, also a fine painter whose work possesses nobility of style, and though his colour is rather leaden and dense in heavy tones, it is always impressive and dignified in composition.

Claude Lorraine, the most famous of French landscape painters, made himself an immortal name. Even in his own time his work was much sought after, although it was with many a hard struggle he had to make his way. He is perhaps the head of landscape art, as he was truly the one who did much to draw the world to an appreciation of landscape painting for itself alone. His art, like that of Poussin, is based on classic feeling and a love of the great and lofty beauty of nature. He found in Italy a country whose atmosphere and traditions helped him to develop himself and his beautiful feeling in art. He created a great school of pure landscape art that was to shed its lustre on all followers who came after him. He was a most consummate master of composition, and is for all time an example to be followed for real classic feeling and nobility of design. His teaching is clearly felt in many of the greatest landscape painters who came after him, and in all countries where landscape painting developed.

In Claude Lorraine landscape art had its great pioneer and master, who created the truly noble classic style which was to be looked up to as a guide and inspiration to artists of all time. He was a most prolific worker like most of the great artists who have ever lived, and shirked no care or trouble in making his work as faultless and beautiful as he could.

In speaking of the Early Dutch school, it is difficult to do so without assimilating it with the Flemish, as it was affected by that school. The beginning of oil painting in Flanders was with the Van Eycks; an influence and affinity always existed in this new art, as it was then; but with the Dutch school of landscape there is a most marked change in the artistic aims between that school and that of Flanders. The landscape school which arose in the seventeenth century in Holland was destined to carry this branch of art to a much nearer and much truer painting of nature. It cast aside the classic and conventional ideas which had affected the Utrecht school, and sought to paint nature as she really was with the utmost fidelity and truth, and without preconceived ideas of making elaborate compositions. It is this great charm that holds us to the work of the Dutch school, which was so sound, and which was to lead to a new outlook. It was the ambition of all or most of the classic Dutch painters to visit Rome; and a conventionality and superficiality gradually engulfed this school, which eventually became stale from a well-watered academic formula.

It is to the school founded at Haarlem that the high-watermark of Dutch landscape art owes its deservedly great fame. It was here that the real process of a new awakening to the beauties of nature began, that the simplest themes and subjects were selected and painted with faithful care. Here one may say the modern school had its beginning, as it is the aim of the painter to-day to get nearer nature or to give some new truth. To-day men try more for light and its effects on objects—these Dutchmen went for the truth of objects naturally seen without conventional composition.

Peter Molyn and Van de Velde influenced and attracted many artists then concerning themselves little with Italy and classic art ideas. They set to work to paint the scenery about them, and it was Van Goven, the pupil of Van de Velde, whom we may consider the first of the greatest landscape painters. Van Goyen distinguished himself in his art by a fine breadth and great beauty of draughtsmanship, his skies are very finely modelled and drawn, the gradation very true and fine in tone. His colour schemes are very simple and refined, and although using a very limited palette, he got a fine truth and colour. His work must always rank high. Though his colour is inclined to be monotonous in tone, it is always good quality and very silvery. He got fine effects of lighting in his work.

Solomon Ruysdael adopted Goyen's method and was no doubt a pupil of his. He did very interesting work in more pure pastoral landscape, and carried on the style of his master with great skill (much of his works for many years were given to Goyen). He developed an original outlook of his own which was quite distinguished.

It is to Jacob Ruysdael, a nephew of Solomon's, we now turn. He was certainly one of the greatest of the Dutch landscape painters, and he shares the honours with Hobbema, who was his friend, as the doyens of the Dutch school. Jacob was no doubt a pupil of his uncle Solomon, from whom he got a very sound training. He developed

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a more full and rounded art, with a great perfection of technique, a beautiful sense of tone and fine draughtsmanship. His skies are very fine and are more subtle than the earlier painters; in fact a great advance came with his art, which was more free and fluent, with a greater depth and higher range of colour and lighting.

Hobbema, though almost prized as the greatest Dutch landscape painter, owes this favourite place to the fact that his work was discovered again after having been lost in obscurity for many years (just as also was that of Ver Meer of Delft). His work was collected and sifted out by appreciative amateurs. There is no doubt that for many years his work was sold as by Ruysdael, who was the great name and whose work had never become obscured. Hobbema was not successful financially, and died in absolute poverty.

From these great landscape painters pure and simple we will now go to the Dordrecht school. Dordrecht is on the Meuse, and was a delightful spot for the painter, with its long stretches of marsh and water among which cattle wandered. It was here that the Cuyp family of painters settled from whom came Albert Cuyp. His very interesting work is a great landmark in Dutch art, as it is very distinctive, and he must be regarded as a great painter in landscape. In him we see the first signs of getting into a more truthful outlook of colour in respect to nature. He gets a more vivacious tone, more resonant and more full of light, his skies are beautifully drawn and very true in tone, and it is for the luminous quality of effects that he stands so high, more so than for his fine drawing and composition.

A mention of Paul Potter must here also be made, as his landscape work was at a high level, and the great skill and technique of his amazing work will always hold a high position in the Dutch school.

Adrian Van der Velde, also a painter of animals and cattle, like Potter, was a most astonishing master of detail with the very finest of techniques. His landscape art is very interesting, and most certainly count among the men who carried on the traditions and gave fresh view and stimulus to this branch.

We now turn for the next movement in the art of landscape to the British school, but before passing from Continental art we must first note what Spain was doing during this period we have gone through.

Landscape art in Spain never made a school or spread any influence in this branch, but at the same time the very interesting studies from nature by Velasquez, and some topographical landscapes of cities by his pupil Del Mazo and others, show that interest was taken in this branch of art in Spain, although it had no influence on the progress of landscape art as a whole.

The British school, although it developed a most original and distinctive genius of its own, may be said to have derived its first inspiration from the Continent. In the sixteenth century, German, Flemish, and Italian painters became attached to our Court and settled here. Holbein, Zucharn, More, and Ghaerarts may be considered the influences of our early nature school. Later Rubens and Van Dyck made their influence strongly felt, and it is to these magnificent traditions that, I think, we may say such a strong and vigorous school evolved. England was always the home of the collector and patron, and it was thus that our artists had the opportunity of seeing and appreciating the art that had been accomplished and was being done at all periods abroad. Landscape art did not develop in England till the eighteenth century.

Richard Wilson is the beginning of the great school of British landscape painters. His art, influenced by Claude and Poussin, had quite a new movement in it, and a strong individuality of its own. He developed a keener sense of atmosphere than these two painters, his colour was more true and more full of the real joy of nature and light; and although his art was very traditional, he developed a greater breadth and more opulent technique. But his compositions never had the vivacity of Claude or were quite so interesting, perhaps one might say so well designed. If this had been so his work, I think, would have had a higher appreciation than it has at present. He is a great artist, and does not probably stand to-day at the height of fame that will some day be allotted to his work.

Gainsborough is a very fascinating and delightful landscape painter. His early work was very closely modelled on the Dutch school, but he developed a much fuller manner of his own, which possesses a richness of colour and lightness of touch which shows very distinctly his appreciation of the Flemish school. His early landscapes, as I have said, were purely influenced by the Dutch, they are very naturalistic and faithful, but it is in his more mature style that we get the joy of his art. He is a fine colourist and interesting in his compositions, but his landscapes are certainly conventional in some degree, though as accomplished and beautiful as they can be. The treatment of his trees, skies, and colour are more his own artistic personality than a striving for actual realism that later painters have tried so hard to attain.

(To be concluded.)

ARCHITECTS' BENEVOLENT SOCIETY.

The annual general meeting of this Society was held on Tuesday, April 11, at the Library of the Royal Institute of British Architects, 9 Conduit Street, W., at 5 p.m. Mr. Ernest Newton, A.R.A., P.R.I.B.A., president, was in the chair.

Among those present were Messrs. W. Henry White, Lewis Solomon, Edward Greenop, G. Scamell, Osborn C. Hills, Henry Lovegrove, H. Lohr, E. C. P. Monson (representative of the Society of Architects), Percy B. Tubbs, W. Hilton Nash (hon. treasurer), Percivall Currey (hon. secretary), R. St. A. Roumieu (vice-president), Herbert Shepherd, Andrew T. Taylor, and R. Dircks (assistant secretary).

The following report of the Council was presented:—

The Council of the Architects' Benevolent Society, in submitting their sixty-sixth annual report, have to state that the past year has been one of great activity. Owing to the war a considerable amount of work has been undertaken, both directly and indirectly, by the Society in connection with the relief of architects in distress.

The Architects' War Committee, which was established soon after the outbreak of hostilities, collected in response to an appeal made by the President funds which they have placed from time to time in the hands of the Architects' Benevolent Society for administration. Since the last report, the Civic Survey Committee having been successful in their application to the Government Committee on the Prevention and Relief of Distress, the scheme of civic surveys for the areas of Greater London, South Lancashire, and South Yorkshire was started in July. Before the end of the year two grants of £1,000 each were made by the Government Committee, and were administered by the Society on behalf of the Civic Surveys for the payment of salaries, &c. Your Council have further worked in close sympathy with the Professional Classes War Relief Council, with the Professional Employment Committee and the London Society. In consequence of the assistance given by the Government Committee a large number of men have been employed regularly, which has no doubt relieved the Society of burdens it would otherwise have been unable financially to bear.

The funds placed at the disposal of the Society by the Architects' War Committee have made it possible to deal sympathetically with other applications which have been made in direct consequence of the stoppage of architectural work.

As reports of this work will doubtless be published by the various bodies concerned, it is not necessary for your Council now to inform members further of the position of the Society in relation to the progress of the work.

So far as the special work in which your Society is

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concerned, the relief of pre-war cases and of widows and orphans has been continued. During the year eighty such applications have been responded to, an amount of £701 10*s.* having been expended in grants. A further amount of £261 has been paid to pensioners of the Society, making the total amount expended in relief in this way £962 10*s.* Two pensioners have died within the last year, and two other annuitants have been elected and are receiving pensions.

The funds of the Society, notwithstanding the many appeals that have been made in all directions, have been fairly well maintained, the amount received in subscriptions being £636 19*s.*, and in donations and legacies £1,615 3*s.* 7*d.* The dividends on investments amounted to £613 12*s.* 2*d.* A further sum of £113 1*s.* was also recovered from the income tax authorities. The total receipts of the Society, therefore, apart from the special funds placed at their disposal by other bodies, was £2,968 15*s.* 9*d.*

There is a slight diminution in subscriptions, and it is hoped in the coming year that many members who have given donations instead will revert to their former practice. Contributors may be reminded that subscriptions are credited to income, while donations are placed to the capital account, to be subsequently invested in various trust securities.

The capital account was increased £1,000 by the legacy of Mrs. Arthur Cates, and by the sum of £343 15*s.* 1*d.* from the executors of the late Mr. William Glover's estate, which has now been wound up, and from which there will in course of time accrue to the Society jointly with the Northern Architectural Association a considerable sum as residuary legatees. Towards the end of the year the Council were also informed by the executors of the late Mr. C. Bertram Bulmer that the testator had bequeathed a sum of money under certain conditions by which the Society will ultimately benefit. Donations have also been received during the year as follows: Mr. George Edwards, £25; Mr. Ernest Newton, £10 10*s.*; Mr. Arthur Sykes, £10 10*s.*; Sir William Emerson, £10; Mr. Horace Porter, £10 10*s.*; Mr. John Bryce, £10 10*s.*; Mr. Archibald M. Dunn, £10; Mr. Francis E. P. Edwards, £10 10*s.*; Mr. F. B. Dunkerley, £10 10*s.*; Mr. Hervey R. Sayer, £10 10*s.*; Mrs. Flint Clarkson, £10 10*s.*; Mr. R. M. Lucas, £10 10*s.*; Mr. W. Campbell Jones, £5 5*s.*; Mr. Henry Lovegrove, £5 5*s.*; Mr. H. Chatfeild Clarke, £5 5*s.*; Mr. W. Hilton Nash, £5 5*s.*; Mr. Percivall Currey, £5 5*s.*; The Tilers' and Bricklayers' Company, £5 5*s.*; Mr. Sydney Perks, £5 5*s.*; The Sheffield Society of Architects, £5 5*s.*; Messrs. W. & E. Hunt, £5 5*s.*; Mr. Guy Dawber, £5; Mr. T. R. Bridson, £5; Mr. A. Saxon Snell, £5; Mr. Henry Beswick, £5; and various smaller sums.

To the special war fund of the Society the following donations have been contributed: Mr. E. L. Lutyens, £31 10*s.*; Sir Aston Webb, £25; Sir Ernest George, £25; Mr. W. D. Caröe, £10 10*s.*; Mr. Reginald Blomfield, £5 5*s.*

In the summer of last year an exhibition of paintings, etchings, and drawings was held by members of the Imperial Arts League and members of the Institute. The proceeds, in whole or part, were at the option of the exhibitors handed over to the Architects' Benevolent Society's war fund. The Society thus benefited to the extent of £173 16*s.* 7*d.* The Council desire to express their grateful acknowledgment both to the exhibitors and promoters of the exhibition.

During the year purchase has been made out of the capital account of £1,300 War Loan stock, at a cost of £1,230 1*s.* 9*d.*

A War Loan Fund has also been established and a committee appointed to administer it.

The Council have to announce with great regret the death of Mr. H. L. Florence, their senior vice-president, and Mr. J. Macvicar Anderson, one of the trustees and at various times a member of the Council. They also regret to announce the death of Mr. C. Bertram Bulmer.

The following, being the five senior members, retire by rotation from the Council: Mr. Henry Lovegrove, Mr. William Grellier, Mr. C. R. Baker King, Mr. Andrew T. Taylor, Mr. W. D. Caröe. To fill the vacancies caused by these retirements the Council have the pleasure to nominate Sir John J. Burnet, Mr. William Woodward, Mr. Arthur Ashbridge, Mr. A. Saxon Snell, and Mr. Lewis Solomon.

In concluding the report the Council wish to urge upon all those in a position to do so the necessity of supporting the Society in their effort to relieve the distress of their poorer brethren and those dependent on them. It is hoped that there will be no further decrease in subscriptions, and that members will endeavour to obtain the support of those who have not hitherto subscribed.

Mr. Ernest Newton (chairman) said it was usual for the chairman in proposing the report for adoption to make a few remarks in connection with the Society and its activities. The Architects' Benevolent Society was, as they knew, a Society established sixty-six years ago for the purpose of assisting architects, architects' assistants, and their dependents who from one cause and another require help at some stage of their career. On account of the war a very great strain has been put on the funds collected for meeting cases, and they are very numerous of those who, through the almost complete stoppage of building, have suddenly found themselves with very little income in the present, and the prospect of none whatever in the immediate future. It is the duty and the privilege of those still earning a professional income, as well as of those who are in the enjoyment of private means, to assist the less fortunate by every means in their power. In these times everyone feels that he is poor, but this poverty is relative, and we must realise that what we give must cost us something. We should not only make but feel the sacrifice. So far, the Architects' Benevolent Society has been able to collect enough for their immediate purposes without any appeal to the general public, and they would all prefer to rely mainly on themselves, but of course if the war is very prolonged it will be necessary to consider the advisability of an appeal to a larger public. One way by which the funds of the Architects' War Committee which are administered by the Architects' Benevolent Society might be legitimately increased would be this. Some architects in the far off days of prosperity have had one or more wealthy clients. Probably an appeal to them would produce a good result, and possibly, before very long, the subscribers may be asked individually to undertake this disagreeable task. But besides these special funds the Architects' Benevolent Society has a constant need of subscriptions and donations to assist the ordinary cases of distress, which were with it before the war, and which will continue after the war. The difficulties of those who are in receipt of the small help the Society is able to give them are much aggravated by the higher cost of living, and it will probably be necessary to advance larger sums in the future. In conclusion, therefore, he would like to appeal on behalf of the ordinary funds of the Architects' Benevolent Society and on behalf of the special war funds to everyone to subscribe something, large if possible, but the smallest gift is acceptable. Since he had the honour of being president of the Society he had seen something of its inner working, and he assured them subscribers could give with the knowledge that their gifts will be applied with wisdom, delicacy, and tact.

Mr. W. Henry White seconded the adoption of the report, which was carried unanimously.

The Council for the session 1916-17 was elected as follows: President, the President R.I.B.A., Mr. Ernest Newton, A.R.A.; vice-president, Mr. Reginald St. Aubyn Roumieu; ordinary members, Messrs. Basil Champneys, C. Stanley Peach, W. Campbell Jones, Percy B. Tubbs, Edward Greenop, Lewis Solomon, Arthur Ashbridge, H. Chatfeild Clarke, Horace Porter,

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Walter L. Spiers, W. Henry White, Sir John J. Burnet, A. Saxon Snell, Wm. Woodward, E. C. P. Monson (representative of the Society of Architects).

Mr. W. Hilton Nash, in acknowledging a vote of thanks and his re-election as hon. treasurer, said he was glad to see their capital had now got beyond the £20,000 limit. He thought they ought now to aim at the £30,000 mark. When he was first elected hon. treasurer the capital was only £7,000, and he never thought it would reach £20,000. This increase was not due to himself but was a proof that the Society was recognised as being worked properly, and that architects were in sympathy with it.

Votes of thanks were accorded to Mr. Percivall Currey, who was re-elected as hon. secretary; to Mr. Herbert Shepherd and Mr. Osborn C. Hills, who were re-elected hon. auditors; to the chairman; to the professional auditors, and, finally, to the R.I.B.A. for the use of their rooms.

THE ARCHITECTURAL ASSOCIATION.

AN ordinary general meeting of the Architectural Association was held at 37 Great Smith Street, Westminster, S.W., on Monday, April 3, Mr. H. Austen Hall, F.R.I.B.A. (President), in the chair.

The minutes of the previous meeting having been read and confirmed, the President proposed that a vote of condolence be passed to the relatives of the following members, who had fallen in the war since the last meeting of the Association:—Messrs. H. E. J. Davidge, Maurice Day, and Henry Wood. The motion was carried in silence.

Two nominations were announced, and the following gentleman elected a member:—Mr. C. J. Kennedy, 49A Longridge Road, Earl's Court, S.W. The following reinstatement was announced:—Mr. A. K. Chaudhuri, 118 Elgin Crescent, Holland Park, W.

The President read the Council's nominations for the house list for the ensuing session, and stated that formal nominations would take place at the next ordinary general meeting which would be held on May 1, when it would be competent for any two members to nominate further candidates.

It was announced that the late Mr. H. L. Florence had bequeathed to the Architectural Association the sum of £1,000 for the purposes of the Association, and a further £1,000 to found and provide an annual prize to be described by or associated with Mr. Florence's name.

The meeting then terminated.

LONDON 43 V.A.D. (ARCHITECTURAL ASSOCIATION).

A SECTION of this detachment (which is composed very largely of architects), under the command of Commandant A. W. Coffin, provided two fully-equipped stretcher squads at the Michie Hospital, Queen's Gate, on the occasion of the opening of that institution by H.M. Queen Alexandra. Her Majesty was received by the Commandant of the Hospital, Mrs. Harry Isaacs, and by Dr. Brydone, whose services to the detachment as medical officer in connection with the recent Red Cross lectures have been so much appreciated.

During the afternoon Lord Reading inspected the hospital, and spoke in most appreciative terms of the services which are being rendered throughout the country by the V.A.D.s working under the British Red Cross Society. Members of the detachment afterwards had an opportunity of inspecting the hospital, which is fitted with the latest appliances in the way of baths, &c., and is believed to be the only hospital of its kind in the kingdom which is possessed of one particular type of medical bath.

Those members of the stretcher squads who are architects were in particular able to appreciate the very successful manner in which the Hon. Architect to the hospital, Quartermaster Victor Wilkins, M.S.A., had overcome the many difficulties incidental to adapting a mansion of this description for purposes for which it was never originally intended, viz., the reception and treatment of something like fifty wounded soldiers.

With the opening of the Michie Hospital the Architects' V.A.D. will be, in addition to its other duties, providing orderlies for five V.A.D. hospitals in the Westminster Division.

NEW AND CHEAP MATERIALS FOR COTTAGES.

AT the National Congress on "Home Problems After the War," held at Caxton Hall, London, this week, under the auspices of the National Housing and Town Planning Council, a report on the above subject was presented by Mr. H. L. Paterson, A.R.I.B.A., of Sheffield. The full title of the paper was "The possibility of adopting new and cheap building materials and securing economies in the design of cottages, provided that the essential standards of good building construction and of wholesome environment of dwellings are not impaired," and it ran as follows:—

Cottage Designing in the Past.—The types of cottages which for the past sixty years or more have been given to a long-suffering people, and with which our industrial town and suburban districts have been filled, do not indicate any special depravity of the speculative builder who has supplied the want, any more than of the community which has been content to accept them. They are the outcome of a combination of circumstances over which the speculative builder has had very little control, and it may be doubted whether he has often made more than a bare living.

The plans of the ordinary types of cottages have, with slight variations, become almost standardised, in the continual effort to meet the requirements of the local authorities at the lowest possible cost.

The smallest type of cottages (omitting the consideration of back-to-back houses), which have been let at rents of 4s. 6d. to 5s. 6d. per week clear, have a frontage of about 12 feet each, and contain a living kitchen in front, with an area of about 150 feet, and a scullery at the back about half the size. The stairs, nearly all winders, open into the scullery, and there is a bedroom over each of the ground-floor rooms. There is a small dark pantry under the staircase. The next size, let at about 1s. per week more, contain a living kitchen at the back, and a parlour about the same size, or a little less, at the front.

No more frontage is required for this type than for the other, stairs being placed between the rooms, quite in the dark usually, and it is only just possible, if the by-laws are kind, by means of very narrow treads and very steep risers with a sunk landing at the top, to climb up to the bedroom floor. This plan gives two good rooms over the ground floor rooms. There may or may not be a cellar under the front room, which does duty both as a larder and a coal store.

The next step is to provide an additional scullery, and this is done by means of an annexe projecting at the back and leaving a narrow space, not too well provided with light, for the living-room window. Beyond this, or perhaps before the scullery addition is given, an attic is provided over the centre of the house, the width between the front and back walls usually permitting this to be done in accordance with the by-laws, and this is quite open to a very steep stair, almost all winders.

The cottages are in as long terraces as the by-laws permit, and for the purposes of access to the back and for drainage, through-passages are provided, one to each pair, four, or eight houses, the space over being allotted to one of the houses or divided between two. For this an extra rent of 3d. or 6d. per week is charged. In districts where back roads are required, the through-passages are omitted. The w.c.'s, and perhaps the coal places, are usually placed in a detached block as near the houses as possible to save drainage costs. As

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to the appearance of the houses, it has been the custom to pay more or less attention to the fronts and to let the backs take care of themselves. Stone, if it is a stone district, is used for the fronts only, or pressed or other best bricks if it is a brick district, the backs being of the commonest and cheapest stocks obtainable. As the rents rise, the ornamentation of the fronts becomes more pronounced, rough cast, half-timber framing, ornamental barge boards, and other features, which tempt purchasers and add to the cost of maintenance being given, the backs in the meantime remaining uncared for.

Cottage Designing in the Future.—The principal effort of the cottage designer who wishes to improve upon these types is to get away from their worst features with as little extra cost as possible, and even to try to economise in some directions which in the past have been overlooked. This is by no means easy, and the smaller the type of cottage the greater is the difficulty.

The Provision of Bedrooms, Parlour, &c.—The first improvement is probably the provision of three bedrooms even in the smallest cottage. This necessitates two being small, but it is better for family reasons to give two as small as the by-laws permit, than to give one larger room. The doors are usually left open, even if the windows are closed. Whilst every effort should be made to induce tenants to occupy the most comfortable room, it is by no means a mistake to give a small parlour in the better-class cottages. It is all very well for the possessors of drawing-rooms to abuse parlours in cottages, but it is not always convenient to show a visitor into the living-room, which at the time may be in use by the family for meals or other purposes. A man or his wife, or both, may desire to have a little quiet whilst the living-room is full of children, or the older children may need quiet in order to prepare their lessons.

The Abolition of Back Additions.—Perhaps the most important development of cottage planning, and the most usual, as may be seen by an examination of published drawings, is the abolition, where possible, of back additions. These tend to shut out the light and air from the one room which is in constant use, and make the living-room, instead of the brightest, the gloomiest room in the house. This, however, requires more land, and entails more expense in street and drainage work. Apart from these, there need be no extra cost in the building and the simplicity of the plan may even lead to a reduction. The removal of detached blocks of w.c.'s and coal places is very desirable, and if these are included in the main block of the building, even if entered from the outside, the extra space over will be available for bedroom accommodation.

The Avoidance of Long Rows.—It is also desirable to aim at the abolition of through covered passages and the avoidance of great length of terraces. This, of course, requires a little more frontage; but the space occupied by three or four passages will go a long way in providing a reasonable space between the blocks. These need not be limited to pairs, but blocks of four, six or eight, may be introduced and variety may be obtained by emphasising the end or the central features. An estate developed on these lines is preferable to one where pairs of small cottages are monotonously repeated. In this connection the question of combined drains must be taken into consideration, and the local by-laws will determine the number of houses which may be drained in one direction.

The Treatment of Fronts and Backs.—As far as possible there should be no essential difference in the external treatment of front and back. There is nothing which gives an estate such a satisfactory appearance as to see all sides treated alike. A glance from a railway carriage will usually announce the presence of an estate developed on "garden suburb" lines and distinguish it from others of the ordinary type.

Walls and External Finishings.—We are urged to build with local materials, especially with local stone, and it is very pleasant to be able to do so; but this is often a counsel of perfection. Stone, if there are quarries quite near, may certainly be used economically; but it is and must remain impracticable to use it for large numbers of cottages of the smallest type in industrial districts. Even when quarries are near, speculative builders have found it more economical to use bricks for backs, thus making the objectionable distinction between the two. There are towns in which almost all the houses in one suburb are stone faced, on account of the proximity of quarries, whilst on the other side of the town brick is exclusively used, the cost of carting three or four miles making the use of stone prohibitive. For nine-tenths of the cottages in our towns brick is and must remain the usual building material. Good, well-burnt stocks of uneven tints, whether grey or red, with good mortar joints for all faces, are preferable to carefully selected facings for fronts and the commonest bricks for the backs and ends.

It is the experience of most architects, at least in the North of England, where it hardly ever rains without driving, that a 9-inch solid brick wall will not keep out the wet. To point with cement is of no use, because the wet finds its way through the bricks and the position of the headers is often distinctly traceable by wet patches inside. To ensure the back joints being full of mortar may only make matters worse, and it is often found that a wall where the headers are reduced to a minimum and the back joints left open, resists the weather better than a thoroughly well-built wall. This may appear to be a condonation of "jerry building," but it is a common experience to find that it is so. The best remedy is to build cavity walls, using galvanised iron ties for bonding, and although the construction is not so sound theoretically, it is strong enough for walls of the height to two ordinary storeys, and nobody has ever heard of a house falling down owing to lack of proper brick bond.

The cost of a 11-inch cavity wall over a 9-inch solid wall is very little—only about the price of the ties—but some other expense is entailed. There is a little more roof to cover, there are wider lintels, damp course is required over all lintels, window boards are wider, and it is necessary to have a 14-inch wall below the damp course. There is, however, no expense better justified than that of a cavity wall.

Rough cast, put on wet or dry, gives a good effect by introducing a mass of grey or white colour between a brick base and a slated or tiled roof. It should, however, be remembered that not only is there almost the whole of the extra cost of the rough cast over that of the bricks, but that there is the cost of maintenance to be considered. In places where tenants do not take some pride in the appearance of the houses it is likely to be broken off in patches and it soon presents a very untidy appearance.

It is as unsafe to cover a 9-inch solid wall with rough cast as to leave it bare. It is quite usual to find fine cracks in stucco, however good it may be, after a time, and if the rain drives in and runs down behind the stucco, it finds its way inside the house in places where it cannot be traced. It is a common experience for an architect to be called in to advise about a damp wall covered with stucco, and to be compelled to coat it with some kind of petrifying solution. It is safer to have cavity walls even when they are to be covered, but, if not, then smooth stucco is safer to use than rough cast, and one of the excellent waterproofing liquids or powders should be added.

It is surely unnecessary to insist, as is done in the Metropolitan area, on party walls being carried up above the roofs. This involves expense in brickwork, flashings and coping, increases the danger of wet entering, and is very ugly. Has a row of cottages ever been burnt down because this has not been insisted upon?

Height of Rooms.—By-laws usually fix the heights of rooms and in some places quite unnecessary heights are stipulated, such as 9 feet clear for ground floor and first-floor rooms, and 9 feet for two-thirds of the area in attics. It would appear that Rural Councils are the most unreasonable in this respect, and there is danger of some of the most picturesque villages being filled with lanky erections quite out of keeping with their surround-

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ings. If proper window space is provided, some opening within a few inches from the ceiling, there is no reason why—say 8 feet—should not be permitted for ground-floor rooms and 8 feet or 8 feet 6 inches over half the area for first-floor rooms or attics. In some places the regulations actually prohibit first-floor rooms to be made in the roof at all. A concession has sometimes been made in allowing a height of 7 feet 6 inches at the walls, but this is of very little use because another by-law may fix the height of the top of the windows at this minimum, thus making it impossible to get the windows under the eaves and necessitating the upper parts being treated as dormers. The expense consequent on labours in cutting, in copings, lead, extra rain-water pipes, and other incidentals more than counterbalances the saving by reducing the height of the walls. If the average height could be fixed, leaving that at the walls open—or say 5 feet—the saving in walling would be material, and this would permit steeper roofs and the more extended use of tiles, with a consequent variety in design without great extra expense.

Roof Coverings.—Welsh slates are cheaper than plain tiles, not only yard for yard, but as a steeper pitch is required for tiles there is more space to cover and the average height of the party walls is greater. There is a prejudice against blue slates from an æsthetic point of view, although slate blue is in itself a beautiful colour. Except in the immediate neighbourhood of quarries of other varieties, Welsh blue slates are likely to continue to be used more than any other for cottages on account of their comparative cheapness.

If a roof is boarded and covered with an underslating of a suitable nature, the best possible results are obtained; this is, however, expensive. If slates are copper nailed and plain tiles hung, with every fourth course copper nailed, and one or the other pointed on both sides of the battens, a cheap and rigid roof is obtained, and one which can be fairly well depended upon to keep out the wet.

Pantiles are cheaper than slates and very charming in appearance; but, as usually laid, they are not so weatherproof as plain tiles unless the roof is boarded.

Windows.—The comparative merits of sash and casement windows have been so much discussed that there is little left to be said about them, and it must always remain a matter of opinion which have the better appearance. The cost is about the same. It must be said that it is very difficult to keep driving rain out if wood casements are used, unless they are made out of thick stuff with elaborate rebating and grooving. Light wood casements are constantly being blown about and broken or torn from their hinges. It costs very little more and it is much more satisfactory to abolish all fixed casements and to substitute light steel where required to open only, elsewhere glazing directly into the frames.

Fires, Chimney Stacks, and Flues.—Some by-laws stipulate 14-inch by 9-inch flues, a totally unnecessary size, 9-inch by 9-inch being ample except for the kitchen range. The former waste room that can ill be spared in a small cottage.

When there are fires in the rooms on both sides of the house it is better not to carry up separate stacks, but to gather all over by means of arches into one stack arising above the ridge. In this way expense is saved in brickwork, chimney gutters are avoided, and there is less liability of a curved chimney smoking than of a perfectly straight one. Stacks need not rise more than 2 feet above the ridge instead of the greater heights often stipulated.

Bedroom fires need not be more than 18 inches wide, and arch bars are unnecessary for openings of this width.

Foundations and Footings.—Many by-laws require concrete under all walls whatever the nature of the ground may be, and it has been known that builders have been compelled to cut out solid rock in order to lay the stipulated thickness of concrete. Besides concrete footings, brick footings with regular offsets are usually required, so that a 9-inch wall 16 or 18 feet high has under it a block of concrete 2 feet 6 inches wide. Surely this is unnecessary. In walls of these dimensions it might be permitted that walls should go down to a concrete bed without offsets at all.

It should not be overlooked that in a district which has rubble stone quarries it is often better to put in all the walls below ground in rubble, an 18-inch rubble wall being as cheap as or cheaper than even a 9-inch brick. Also, if rubble is used in this way, with large stones selected for the base, no other footings or concrete will be necessary, the stones adapting themselves well to the irregularities in the ground, provided there is nothing unusual in its nature.

Damp Course.—Much of the old tarred and sanded damp course, now usually prohibited, is of no use for its purpose. Taken out of a wall after a few years it is often quite rotten, and has lost all its weather-proof qualities. Pure bitumen sheeting is perhaps the best and cheapest material to use, and it is not broken by slight settlements in the building as slate often is.

Bond Timber.—Bond timber under joist ends is of no use. Even the inch thick board which now takes the place of the old 3-inch plate once used is not necessary. Joists are never quite equal in depth, and as the top must be kept level for the boards, the ends have to be packed with small pieces of wood laid on the plate. These are liable to decay, and to cause the joist to drop and the floor to become loose. A layer of cement and sand is preferable, but if each joist is laid on the centre of a stretcher brick, the mortar joint under slightly full or thin as the case may require, there is little danger of movement. It is always well to keep wood out of walls as far as possible.

Timber Sizes.—In many by-laws the sizes of timbers as stipulated are needlessly large, and sometimes they are not stock sizes. The distance of 15 inches from centre to centre now largely stipulated is a fair compromise between the ideal of 12 inches and the 18 inches at one time permitted in many places.

(To be concluded.)

TRANSVAAL ARCHITECTS' ASSOCIATION.

The Transvaal Architects' Association held their annual gathering at Winchester House, Johannesburg, on Thursday, March 2, when the Chair was occupied by the retiring President, Mr. Walter Reid.

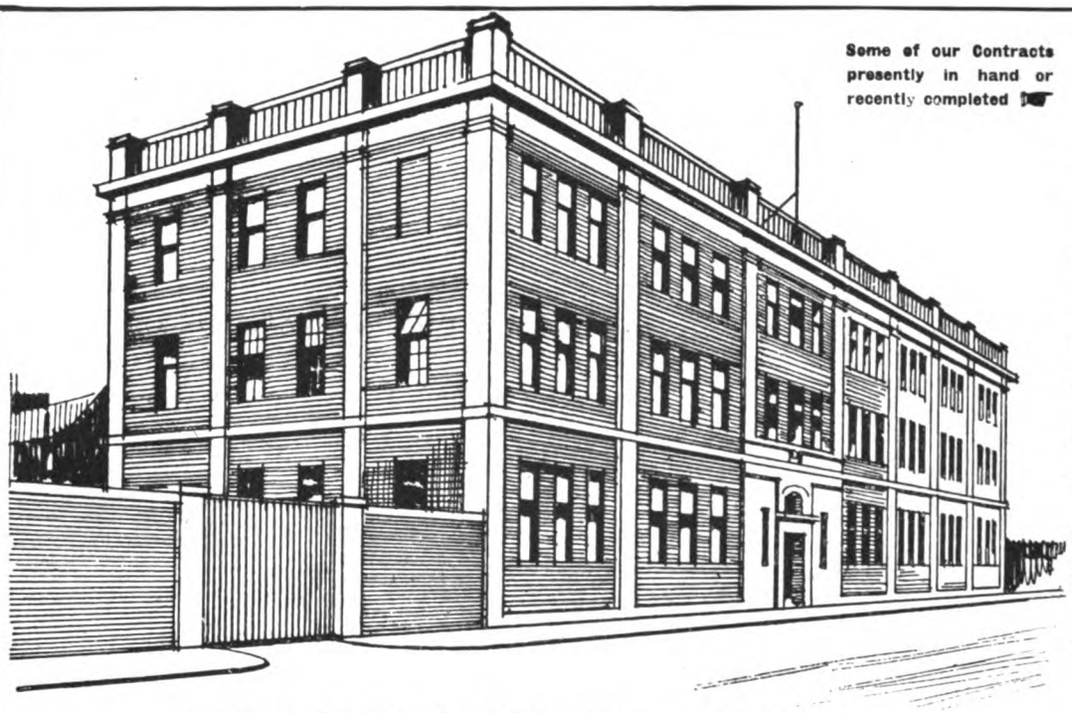
The annual report recorded a membership of 167, a large number of whom were away patriotically fighting the enemy of civilised mankind in Europe and East Africa, and, formerly, South-West Africa. It was reported that the Council of the Association had appointed three members to act as a standing committee to collaborate with a similar body at Capetown to forward the submission of a Union Registration of Architects Bill to Parliament. A journal had been established, of which Mr. Solomon was the editor, and Mr. Waugh assistant editor. The first number of the journal had been placed in the hands of members.

The report went on to state that the Council of the Association had approached the Town Council of Johannesburg with reference to the subject of town planning, but without result. Delegates had acted on the Munitions Committee formed at Johannesburg, and letters had been sent to the Belgian and French Governments sympathising with the irreparable loss caused to works of art. The President of the Association had given evidence before the Earth Tremors Commission.

Discussion took place on a motion to recognise the standard system of quantity surveying; also on the subject of the practice and methods of charging for quantities.

The following officers were elected for the ensuing year:—President, Mr. E. H. Waugh; Vice-Presidents, Messrs. D. Ivor Lewis and McCubbin; Council, Messrs. Burton, Beardwood, Veale, Howden, Sinclair, Solomon, Dowsett, Powers, and W. Reid.

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W. H. Smith & Sons, Newcastle. New Stationery Warehouse.
Fred. Morrison, Esq., Glasgow. Reconstruction of Store.
Alex. Stephen & Sons, Shipbuilders, Linthouse. New Offices and Stores.
Anchor Line (Henderson Bros.), Ltd., Yorkhill. New Stores.
N.B. Diesel Engine Works, Scotstoun. Four Contracts.
Glasgow Municipal Buildings Extension. Floors, Roofs, and Staircases.
G. & S.-W. Railway Company. Bridge at Dornock; Gangway, Troon Harbour.
Lanarkshire & Ayrshire Railway. Bridge to carry Railway Traffic.
Glasgow Royal Infirmary Reconstruction. James Miller, Esq., A.R.S.A., Architect.
Mitchell Library, Glasgow; West End Playhouse, Glasgow. W. B. Whitie, Esq., Architect.
McGeoch's Buildings, Glasgow; Nobel's Offices, Glasgow; Wallace Scott & Co.'s Factory, Glasgow; Western Infirmary Extension, Glasgow. Sir John Burnet, A.R.S.A., Architect.
Buchanan's "Black & White" Whisky Store; Pathological Building, Victoria Infirmary; School Board Offices, Glasgow; City Hall, Perth; Dewar's Bond, Perth. Messrs. H. E. Clifford & Lunan, Architects.
Royal Exchange Assurance Buildings, Glasgow; Mackie's "White Horse" Whisky Store; Distillers Co., Ltd., New Maltings; Rubber Factory for Campbell Achnach. Messrs. Frank Burnet & Boston, Architects.

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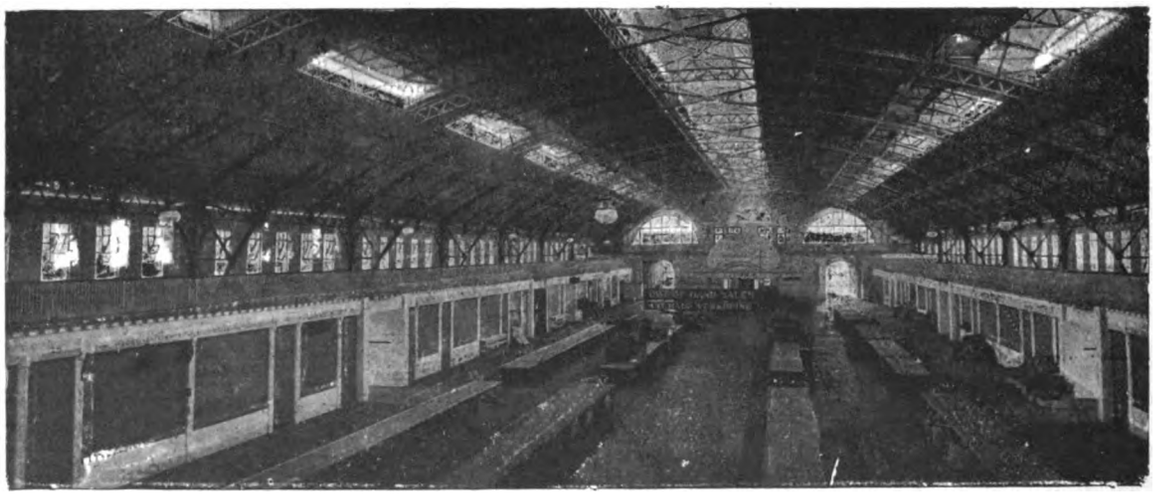
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BRITISH FIRE PREVENTION COMMITTEE.

THIS Committee has just issued the following provisional memorandum on a mixture of sawdust and bicarbonate of soda for extinguishing small petroleum spirit, &c., fires.

1. *Introductory.*—The British Fire Prevention Committee have recently carried out a series of tests, the results of which tend to prove that sawdust intimately mixed with bicarbonate of soda and applied in bulk has certain advantages over sand and similar materials as an extinguishing medium for comparatively small fires occasioned by the ignition of the vapour of petroleum spirit (petrol) and other inflammable liquids.

2. *Sawdust.*—When sawdust is applied to the surface of a liquid it will float for some time, thus excluding the oxygen of the air and smothering the fire. Ordinary sawdust, as obtained from sawmills, is the most suitable for this purpose. It must be free from shavings and chips of wood, but it does not require to be either specially dried or to contain added moisture.

3. *Bicarbonate of Soda.*—The addition of bicarbonate of soda, although not essential, is advantageous. Under the action of the heat from the burning liquid, carbonic acid gas is given off from the bicarbonate of soda adhering to the floating sawdust, and accordingly close to the source of the fire. The gas given off under such circumstances slightly assists in extinguishing the fire. Bicarbonate of soda is readily obtainable at a very small cost.

4. *Proportions of the Mixture.*—The Committee have found an effective proportion of bicarbonate of soda to sawdust to be 10 lb. to 1 bushel (or, say, 12 lb.) of sawdust.

5. *Container.*—Any form of bin, such as a dust-bin or corn-bin, can be used, but a specially suitable bin for the mixture can be made of sheet iron, having a base 24 inches square, sides 3 feet 6 inches high, top 18 inches square, so that the sides slope slightly. The top should be arranged for filling purposes, and at the bottom of one side there should be provided a hinged door 16 inches wide and 21 inches deep, held up by buttons, the hinges being at the bottom; on unfastening the door it should fall on the floor, forming a convenient opening for easily shovelling out the mixture. Such a bin would hold about 8 bushels, and it should be kept in a convenient and easily accessible position as near the petroleum spirit, &c., as possible.

6. *Shovel.*—Any form of shovel or scoop can be used. Preferably it should have a long handle with a large scoop. In order that the shovel should be always handy, it is suggested that suitable provision should be made for holding it on the bin.

7. *Application of the Mixture.*—The mixture to be thoroughly effective should be applied not only in bulk but rapidly and systematically, the object being to produce what may be termed a lateral "curtain" or scythe effect.

8 Waterloo Place, Pall Mall, London, S.W., 1916.

NOTE AS TO LIMITATION.—The Committee wish to emphasise the fact that so far their investigations have been limited to small quantities of inflammable liquids not exceeding 2 gallons, and the areas over which they were spread did not exceed 6 feet square. These conditions are met with in motor garages and hangars, for which, in the opinion of the Committee, the proposed mixture is applicable and economical.

The Committee take the opportunity of indicating that their tests showed that the application of this mixture or any similar mixture in small quantities from tubes or canisters does not give satisfactory results.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BERKSHIRE.

Newbury (near).—Proposed church, Wash Common (£4,000). Mr. George Hubbard, F.R.I.B.A., architect, 112 Fenchurch Street, London.

BUCKINGHAMSHIRE.

Beaconsfield.—No. 63 Wycombe End: alterations for Lord Burnham.

Bletchley.—Houses, Aylesbury Street, for Messrs. Howard Brothers.

DURHAM.

Hebburn Colliery.—Social club-house, High Lane Row and Low Road. Mr. G. R. Smith, A.R.I.B.A., architect, 67 King Street, South Shields.

ESSEX.

Bocking.—Four houses, Courtauld Estate. Mr. A. G. Wicks (Braintree), builder.

Leytonstone.—St. Augustine's Mission Church: proposed rebuilding.

GLOUCESTERSHIRE.

Stroud.—Cinema, King Street. Mr. V. A. Lawson, architect, 17 Rowcroft.

HAMPSHIRE.

Bournemouth.—Refreshment rooms, East Cliff and Fisherman's Walk. Borough Engineer.

LANCASHIRE.

Accrington.—Premises, Oak Street: alterations for the Accrington Co-operative Society.

Six houses, Ashworth Street, Baxenden, for Messrs. Helliwell & Co.

Bacup.—No. 27 St. James' Street: alteration for Mr. T. Horsfall.

Castleton.—Proposed eighty houses, for the Corporation of Rochdale.

Two mills: extension for the Dunlop Rubber Co.

Chatburn.—Proposed twenty-two cottages, for Chatburn Manufacturing Co.

NORTHAMPTONSHIRE.

Oundle.—Museum, Galpthorne Road, for the School authorities.

NORTHUMBERLAND.

Newcastle-on-Tyne.—Rutherford College: additional storey to the new wing.

SHROPSHIRE.

Oswestry.—House, &c., Welsh Walls, for Mr. J. E. Morgan Jones.

SUSSEX.

Hastings.—Nos. 1 and 2 Markwick Terrace: conversion into flats for Dr. S. C. Menneer.

"Provincial" Hotel, Havelock Road: alteration. Mr. P. Tree, F.R.I.B.A., architect, 59 London Road, St. Leonards-on-Sea.

WARWICKSHIRE.

Birdingbury.—Cottages, &c., for Mr. Milne.

Hillmorton.—Motor-house, for Mr. A. Starkey.

Stockingford.—Six houses, Westbury Road, for Messrs Stanley Brothers, Ltd.

WORCESTERSHIRE.

Kidderminster.—The "Fish" Inn, Orchard Street: improvements, for the Wolverhampton and Dudley Breweries, Ltd.; also

The "Royal Exchange," New Road: extensions.

YORKSHIRE.

Batley.—Hippodrome: extension and alterations.

"Anchor" Mills: additions for Messrs. J. Rhodes & Son.

Bradford.—Girlington Congregational Church: proposed new church.

Bridlington.—No. 25 Horsforth Avenue: proposed additions and alterations, for Mr. F. Leach.

Halifax.—Engineering Works, Ovenden: extensions. Messrs. R. Horsfall & Son, architects, 22A Commercial Street.

Leeds.—Carnegie Free Public Library (£12,000).

WALES.

Old Colwyn.—Six houses, Cadwgan Road. Messrs. R. Evans & Sons, builders, Mohrcroft.

Trefriw.—House for Mr. Pickford.

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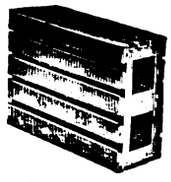
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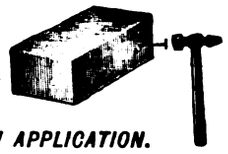
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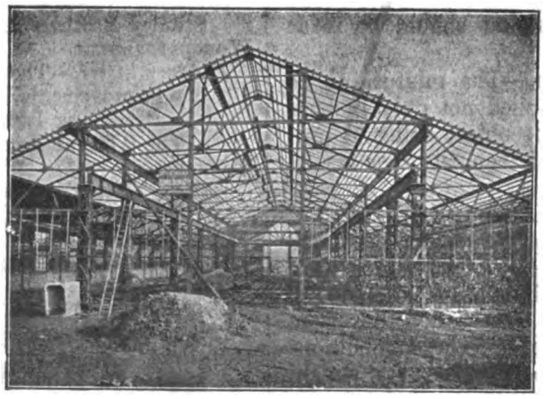
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IRELAND.

Belfast.—Villas, Marlborough Road, Central Avenue. Mr. J. S. Munce, architect, Scottish Provident Buildings. Messrs. McAuley & McIlroy, contractors, Cromac Street.

Killorglin.—Nineteen labourers' cottages, Dromavally, for Killarney R.D.C.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 1,422. Jan. 28, 1915.—Ferro-concrete structures. A. W. C. Schelff and Thos. S. Allden, both of Caxton House, Westminster, S.W.—The present invention is generally applicable to walls, floors, roofs, and so forth, and particularly applicable to ferro-concrete road foundation. The reinforcement consists of a framework or metal fabric arranged in ridges and having all its parts completely connected or tied together independently of the concrete and whereby top and bottom reinforcement is provided with one layer of fabric. In one example the reinforcement consists of superposed rows of bars alternately placed and connected together by wires or rods looped around the bars and running diagonally from the bar in one row to a bar in the next row so as to join the rows of bars together by a zig-zag formation formed with a loop surrounding the bars situated at the bends. The rows of bars may be plain, straight bars or other approved type, and the looped zig-zag bars or wires are, as it were, threaded on, forming the superimposed rows, which are suitably spaced apart thereon. Fig. 1 shows a section of a roadway. Figs. 2 and 3 are details showing modifications; fig. 4 is a perspective view of a portion of the reinforcement shown in fig. 1; fig. 7 shows a modified arrangement of the bars shown in figs. 1 and 4; fig. 8 shows a modification. *a a* are rods formed with a series of loops at the bends, through which loops are passed bars *b* running crosswise of the bars *a*, and disposed in two rows connected together by the said looped bars, which are threaded on to the bars *b* and suitably spaced apart thereon as indicated in fig. 4, which is a perspective view of the reinforced structure shown in fig. 1. Fig. 7 shows the looped bars *a* and connecting bars *b* disposed diagonally. In the structure illustrated, which may be a road foundation, the curbing is conveniently formed by bending the ends of the bars *a* into the form of a square or rectangle as shown in fig 1, bringing the last loop back to the point *c* where two loops a^1 coincide, one bar *b* passing through the two loops. Figs. 2 and 3 show modified arrangements for the curbing reinforcement. Fig. 8 shows a construction similar to fig. 1, but where three rows of connecting bars are employed connected together by superposed looped bars, the intermediate loops overlapping on the central row of bars *b*. A structure of the kind described can be conveniently assembled on the site. The looped bars and the straight bars may be transported separately and much more conveniently handled than large sheets of expanded metal and the like. Feb. 2, 1916.

Fig. 1.

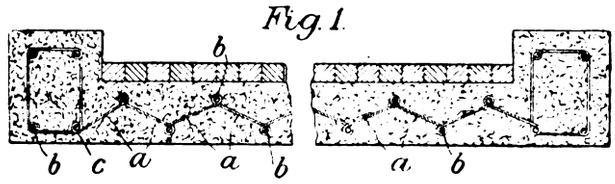


Fig. 2.

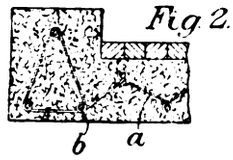


Fig. 3.

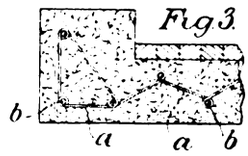


Fig. 4.

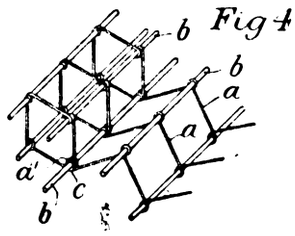


Fig. 8.

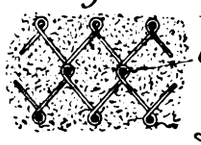
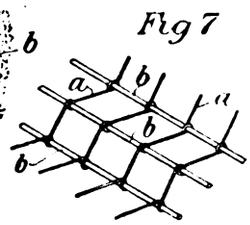


Fig. 7.



PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 24,170. Dec. 16, 1914.—A. F. Berry, 27 Woodville Road, Ealing, W. Electric heat-radiators.

3,650. March 8, 1915.—C. M. Burnett, St. Katherine's, Clifton Road, Shirley, Southampton. Construction of ferro-concrete walls.

3,705. March 8, 1915.—E. H. Moyle, 304 Germain Buildings, Los Angeles, California, U.S.A. Rock crushers.

3,835. March 10, 1915.—A. M. Giuliani, 80 Grande Rue, Chateau-Thierry (Aisne), France. Combined cooking and hot-water heating apparatus.

3,949. March 12, 1915.—C. A. Harrison, 12 Barry Road, East Dulwich. Incandescent electric lamps.

4,414. March 20, 1915. (Dated under International Convention, April 22, 1914.)—Arthur Studer, Neuchatel, Switzerland. Plastic road-surface material and processes for the manufacture of same.

4,713. March 26, 1915.—Henry Sharrow, 100 Lewisham Road, Smethwick. Screw-down valves and taps.

5,341. April 9, 1915.—W. A. Norman and Edward Evans, Crescent Villa, Johnstown, Ruabon, North Wales. Kilns.

9,220. June 23, 1915.—H. E. Fripp, 24 Queen Street, Port Elizabeth, South Africa. Sash windows and like fasteners.

9,536. June 30, 1915.—J. A. Frost, Star Foundry, Langley Mill, Derby. Barless firegrate.

9,723. July 3, 1915.—Henry Desrumaux, 35 rue Alphonse de Neuville, Paris. Process and apparatus for purifying sewage.

9,839. July 6, 1915.—T. D. Kelly, 19 Wilbury Crescent, Hove, Sussex. Paint.

10,163. July 13, 1915.—J. I. Kirby, 5 Victoria Street, West Bromwich, Staffs. Barless front fittings for domestic firegrates.

10,643. July 22, 1915.—Joseph Brewin, Thorndale Cottage, Woodville, near Burton-on-Trent.—Method of making salt-glazed stoneware, pipes, gullies, traps, and the like to prevent blisters after such are made.

13,790. Sept. 28, 1915.—C. S. Windsor, trading as James Bartle & Co., and W. H. Bishop, of 236A Lancaster Road, Notting Hill, W. Ventilators.

4,140. March 16, 1915.—E. T. Fenwick, 600 F. Street, N.W. Washington, D.C. Machines for making inlaid rubber shooting or tiling.

4,224. March 17, 1915. (Dated under International Convention, March 19, 1914.)—P. F. A. Mauroy, 63 rue Clovis, Rheims. System of puttyless glazing.

13,742. Sept. 27, 1915.—G. Schulz, Jansen, Jefferson, Nebraska, U.S.A. Locks.

18,210. Dec. 31, 1915.—Norton & Gregory, Ltd., and T. B. Prichard, Castle Lane, Birmingham. Drawing instruments.

100,121. (173, Jan. 5, 1916.)—E. F. Stimson, 88 Streathbourne Road, Tooting Bec Common, S.W. Domestic hot-water supply apparatus.

100,164. (1,056, March 16, 1915.)—Lancelot Ussher, 33 Exploration Buildings, Commissioner Street, Johannesburg. Connecting of branch pipes to a main pipe.

7,161. May 12, 1915.—The Merritt Manufacturing Co., Lockport, New York, U.S.A. Apparatus for drying veneer.

Any of the above specifications may be obtained from J. D. Roots & Co.

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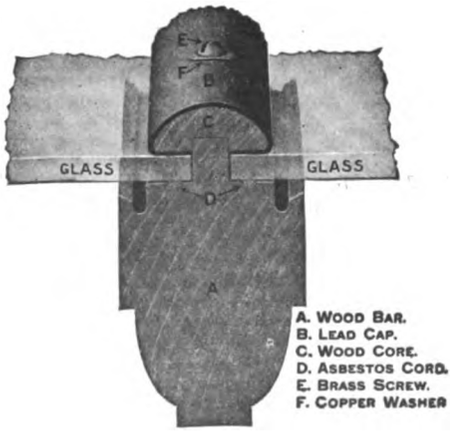
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THE ARCHITECT

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THE DESIGN OF ROADS.

AMONG the many problems that require the attention of the town-planner, few are more vital or more difficult than those concerning the design of roads; indeed, one may say with perfect truth that the planning of the roads is the chief part of the planning of the town. Their direction is of primary importance, their method of construction an essential factor of the financial problems, but their width and allocation of space so intimately connected with the problems of both as to be well worthy of separate consideration by a meeting of the Town Planning Institute, on the occasion when a paper was read by Mr. F. Longstreth Thompson, B.Sc., A.M.Inst.C.E., on "Width and Allocation of Space in Roads."

As a first essential to determining the width of any road and the allocation of that width to various functions comes the consideration of the use to which the road is to be put. Mr. Thompson separates roads into two broad classes: traffic roads and residential roads. The former he subdivides into main avenues, main streets, secondary streets, local streets, boulevards and parkways.

But the mere classification of a road is insufficient, and it is impossible to lay down rigid rules for a standard type of each class which shall adequately meet all requirements. Roads differ not only in their classification, but in the volume and type of traffic that they have to accommodate. Hence an attempt has been made to measure the working load of roads by a scale of obstruction caused by various classes of vehicle, and from this to determine the capacity of roads from the units of obstruction, rather than from the number of vehicles which may be expected to form their burthen.

Investigations for some of the principal London streets of considerable value have been made on this basis by the London Traffic Branch of the Board of Trade, and in their 1914 report they have laid down the following classification scale of obstruction by varied types of traffic: "If the co-efficient of obstruction a 'Traffic Unit' attributable to a motor cab or carriage be taken at one, the following numbers may be assigned to each class of vehicle: *Trade vehicles*: One horse (fast), 3; one horse (slow), 7; two horse (fast), 4; two horse (slow), 10; light motor (fast), 1; heavy motor (fast), 3; heavy motor (slow), 5. *Passenger vehicles*: Electric trams, 9; omnibuses (horse), 5; omnibuses (motor), 4; cabs (horse), 2; cabs (motor), 1; carriages (horse), 2; carriages (motor), 1; barrows, 4; cycles, ½."

While the value of such classification, if accurate, is undoubted, the figures in the scale are necessarily purely arbitrary and matter of opinion, so that it is not surprising to find that when town-planning experts—actual or putative—meet, differences of opinion as to the correctness of these figures are expressed; thus in the discussion on Mr. Thompson's paper some speakers thought the obstruction of trams should be measured as 20 rather than 9 units. There must also, obviously, be a difference in the degree of obstruction caused by the service on which any particular type of vehicle is engaged. Thus, for example, tradesmen's carts engaged on local delivery of goods necessitating frequent stoppages should be measured by a high figure. The scale laid down, in fact, seems to us to require the use of factors expressive of a distinction between through traffic and halting or local traffic.

In Mr. Thompson's classification and subdivision main avenues are distinguished from main streets as being those thoroughfares which form the chief arteries by means of which the traffic from one of the trunk roads of the country enters or leaves the city. In these it is taken for granted that aboveground tramways are an essential, but we are inclined to agree with the view expressed by one of Mr. Thompson's critics, that the aim of town-planners should be the elimination of the tramways. Certainly we would place them in all cases of city streets below the roadway. There can be no doubt that, in the near future, the motor-'bus will kill the tramcar. In London, at the present moment, the tramway system of the London County Council is an economical failure, and is only bolstered up by the assistance of unsound finance and aid from the rates as an alternative to the scrapping of an immense capital expenditure.

With one recommendation of Mr. Thompson's in respect of tramways we are in complete disagreement. He thinks that under any conditions it is "desirable that the track should be definitely reserved for trams by means of a raised curb." Surely Mr. Thompson has forgotten that even main avenues and main streets, to say nothing of those of secondary character, have other thoroughfares crossing them. And even if this difficulty could be got over by a temporary dropping of the tramway level and abandonment of the curb, there still remains the trouble that would be occasioned to traffic needing to halt or set down on the off-side of the road from the direction in which it is travelling.

Such a raised tramway as Mr. Thompson suggests virtually bisects a thoroughfare into two separate roads, each of which must accommodate a double stream of traffic in opposite directions. In some of his suggested sections Mr. Thompson goes so far as to propose two separate raised tramway tracks, thus dividing the thoroughfare into three distinct roadways. The traffic on the centre one of these would thus be completely imprisoned and unable to change its direction or draw up to the footpath except at such infrequent and rigidly determined intervals as interruptions of the tramway track might permit.

In the allocation of space in wide thoroughfares the division of wide roadways is in the interests of pedestrians most desirable. The crossing, for example, of the roadway in the Avenue des Champs Elysées, Paris, with its numerous streams of differently paced traffic, is a performance demanding a cool head, a trained eye, and a quick foot. But the proper method of dividing such roadways, in our opinion, is by frequent islands, long and narrow, rather than by continuous and unbroken tracks. We think that town-planners in discussing questions of road design are apt to disregard too much the questions of crossing and passing, and to consider traffic only in terms of continuous and unbroken streams.

The general idea—shall we say fetish?—in the minds of town-planners for the planting of trees in thoroughfares is one that should not be accepted without consideration. In the first place, there are only a few kinds of tree that will live, or at any rate flourish, in the air of a city. If trees are planted that will not flourish but merely exist, the effect is depressing. If those kinds

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are chosen that will flourish, then trouble begins, both with the roots and with the branches. The former threaten the integrity of pavements and of the numerous pipes that are requisite for modern city life. The latter, if unrestrained, obstruct the free passage of air through the bronchial tubes of the town, overshadow and darken windows on the sides of the street. Lopping demands more skill and artistic feeling than is usually displayed in order to maintain beauty and character.

We should feel disposed to advocate that, as a general rule, trees should only be planted in boulevards or, as it is the fashion now to call them, with a right recognition of their function, park-ways: that is, thoroughfares whose province extends beyond the accommodation of traffic to the provision of attractive resorts for promenaders. In such park-ways, grass and flower beds add much to the amenities, though, of course, increasing the expense of the upkeep. One thing to which some town-planners incline, we should regard as absolutely taboo for city streets, and that is gravel. This method of surfacing is really only suitable where the foot traffic is comparatively small, otherwise it is dusty and unpleasant to the tread, and in all cases there is a considerable amount of expense in upkeep to balance and, indeed, overbalance any initial saving of capital expenditure.

Residential roads stand in quite a different category from traffic roads. These should always be considered by the town-planner in terms of distance between building lines, and the allocation of space should be directed to the maintenance of as much park-like or garden character as the minimum necessary provision of traffic routes will permit. Certainly in residential roads the 40-feet standard of the by-laws should be abolished. Bays or alcoves in the frontages rather than straight traffic ways should be regarded as a primary desideratum.

NOTES AND COMMENTS.

By the death of Lieutenant Adrian Hardman the art of architecture loses one more of the most promising younger men of our time. Born on July 14, 1890, he was the only son of Mr. T. and Mrs. E. L. Hardman, of Eastcote, Northaw, Potter's Bar. He was educated at Christ's Hospital and the Architectural Association, where he gained the fourth year travelling studentship, and had passed his intermediate examination of the R.I.B.A. He was articled to Mr. F. R. Farrow, F.R.I.B.A., and served his improvership with Sir Ernest George, A.R.A., & Yeates. He subsequently went to Paris, where he entered the office of M. August Rey, and speedily became one of that architect's most valued assistants by reason of his ability in design as well as in draughtsmanship. He was still thus engaged, and was studying for the Ecole des Beaux-Arts, when war broke out. He then joined the Inns of Court O.T.C., and obtained a commission in the Royal Fusiliers (Special Reserve) in February 1915, and was appointed bomb instructor. In February last he was promoted to lieutenant and went to the Front, where he was wounded on March 27 in arm and leg. Blood poisoning supervened and the arm was amputated. A further operation to the leg was about to be performed, but he passed away on March 30 from the rapid operation of the virulent blood poisoning.

The acute depression which has afflicted the Welsh slate quarrying industry during the last ten years has naturally been intensified by war conditions, when much of the building that would have used slate has been stopped in favour of temporary building for which presumably cheaper forms of roofing have been preferred. We say "presumably" cheaper advisedly, because we know of at least one case in which, after a contract was entered into for the erection of a temporary building with asbestos roofing, slate was substituted without additional expense. The Portmadoc Urban District Council, with the intention of attempting to grapple with the depression in the slate industry, have decided to convene at Portmadoc Town Hall on the 28th inst. a conference of representatives of various public bodies, quarry-owners, workmen, railway companies, the Press, and shipowners connected with or interested in the slate industry, together with the members of Parliament for the quarry districts, with a view to steps being taken conducive to the revival of trade and, therefore, to the welfare of the district generally.

A resolution will be submitted in favour of the appointment of a deputation to lay before the War Office, the Admiralty, the Office of Works, the Local Government Board, and the Ministry of Munitions the claims of slate to Governmental support on economic and various other grounds, including (1) that hitherto slate has not been used on Government buildings to the extent corresponding to its merits; (2) that in the reconstruction of areas devastated by the war it will be advantageous to the country that a purely British product should be employed to the greatest possible extent, and that if this is to be done immediate steps should be taken to assist the industry to cope with the demand when it arises.

Another resolution will be moved in favour of the appointment of a permanent committee to work on the lines of Chambers of Commerce to promote and co-ordinate efforts for the future welfare of the trade of the district.

It is intended that the aforesaid Committee shall be instructed forthwith to consider and take such steps as appear practicable:—(a) To cultivate a public opinion in favour of slate, through the media of trade journals and newspapers. (b) To secure business in connection with town planning and other building schemes by public authorities. (c) To develop foreign and colonial trade. (d) To promote the demand for slate by meeting æsthetic requirements, and in this connection it is suggested:—(1) That slate in forms other than rectangular be freely manufactured. (2) That different systems and patterns of roofing be promoted. (3) That artistic colour combination be arranged. (4) That roof forms be specially designed to suit slates.

The steps now being taken by the Government to further research in such matters as may benefit the community have had the co-operation of, amongst other bodies, the Institution of Municipal and County Engineers, and the Council of the Institution at their last meeting received the report of their representatives on their conference with the representatives of the Research Council.

The questions considered were:

(1) The utilisation of a larger proportion of the calorific value of house refuse than is possible with apparatus and methods at present in operation, either by (a) an improved form of destructor; (b) the production of power gas from crude or disintegrated refuse, or (c) some other means.

(2) The utilisation of tins by the introduction of a simple and effective detinning process, and other improved methods of treatment.

(3) The more thorough utilisation of clinker from refuse destructors.

(4) The utilisation of sewage sludge.

The representatives of the Research Council stated that they would be willing to discuss at a later date any definite detailed scheme the Institution might put before them, dealing with the utilisation of house refuse and clinker, but they suggested that in the first instance the Institution should collect, tabulate, and analyse as far as possible full information as to what had already been done in this direction. In reference to detinning, Dr. Bealby stated that he would probably be able to obtain valuable information for the Institution, and that the Research Council will assist as far as possible. On the question of sewage sludge, it was also suggested that the Institution should collect information with a view to the drafting of a comprehensive scheme for research work.

In response to the resolution passed at a meeting of the East Riding Antiquarian Society protesting

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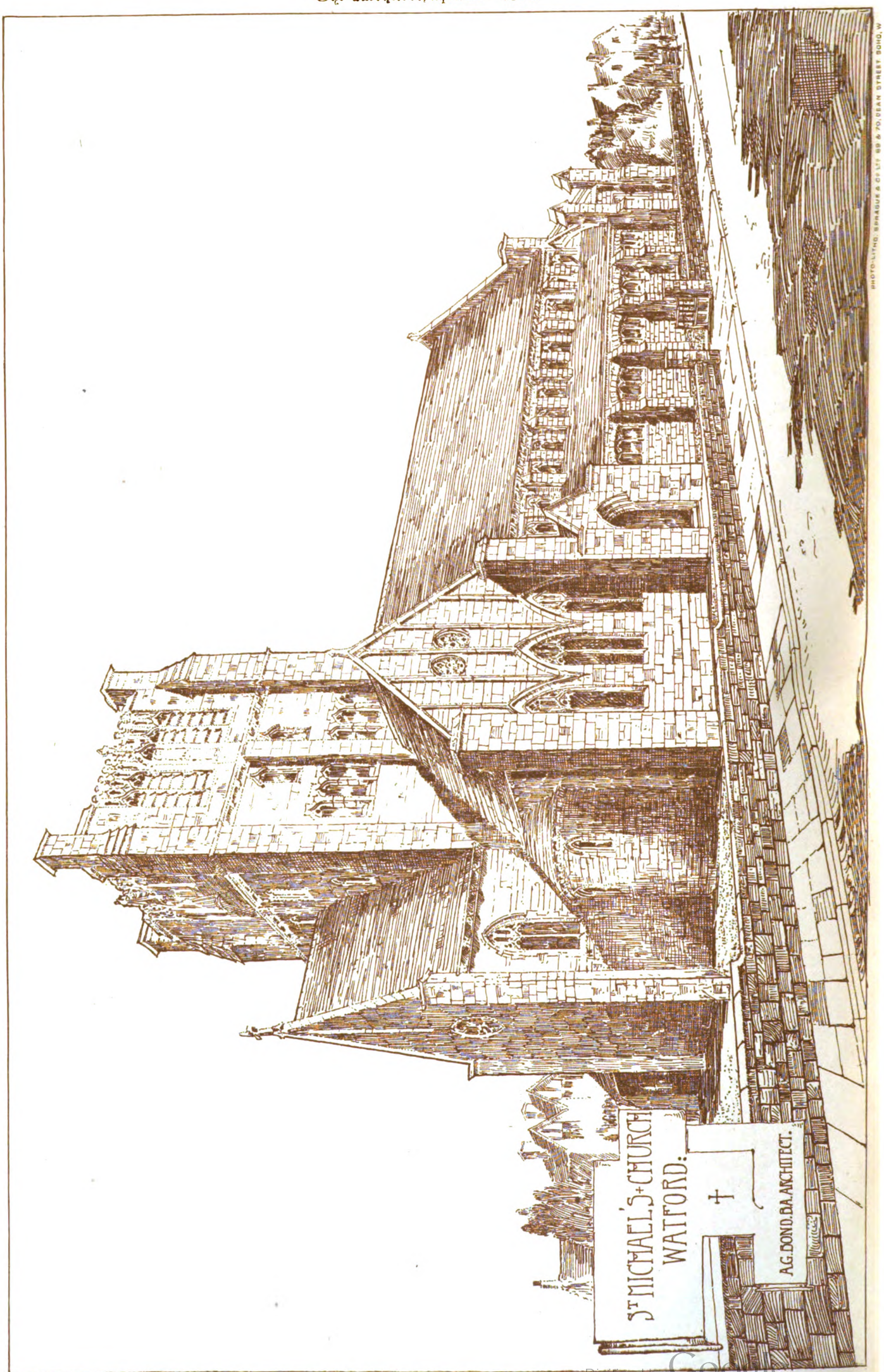


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against the sale of the old Grammar School, at Hull, by the vicar and wardens of Holy Trinity Church, Dr. H. W. Pigeon, vicar's warden, in a letter announces that "the rumour of the sale of the old Grammar School is inaccurate. Suggestions about a sale were made and considered, but over a week ago it was decided, for the present, to repair and retain the premises as Holy Trinity Parochial Hall and Clergy House, though the building is not the best suited to our requirements." With reference to Dr. Pigeon's letter, Mr. John Bilson, one of the local secretaries for Yorkshire of the Society of Antiquaries, London, writes that so far as he is aware there was no rumour of the sale of the old Grammar School, "but there was much more than a rumour that the vicar and churchwardens of Holy Trinity had entered on negotiations for the sale." It can scarcely be denied, he says, that the resolution of the East Riding Antiquarian Society stated quite correctly that the vicar and churchwardens were thinking of disposing of the property, and he asks the vicar and churchwardens to give an undertaking that, before they open any further negotiations for the sale of the property, they will inform either the Inspector of Ancient Monuments or the Society of Antiquaries of London.

ILLUSTRATIONS.

ST. MICHAEL'S CHURCH, WATFORD.

The architect of this church, Mr. A. G. Bond, B.A., A.R.I.B.A., is now on active service (Lieutenant T.C.O.), but sends us the following particulars of his design:—

The main features of the plan are the large central tower over the choir, and the continuous stone arcade forming the two aisles and narthex of the church. At the present time only the nave and these aisles and the western portion and façade are completed. It is hoped in the next contract to include the choir and lower portion of the tower, and either the eastern projection forming the sanctuary or the northern transept forming the Lady chapel. The southern end of the western narthex terminates in an octagonal projection forming the baptistry. The roof of the nave is constructed in English oak in the form of a pointed "wagon" vault, with heavy ribs supported on stone corbels, projecting from the stone piers. The interior is executed in Corsham stone, and the exterior is finished in flint with Box-ground dressings and tracery.

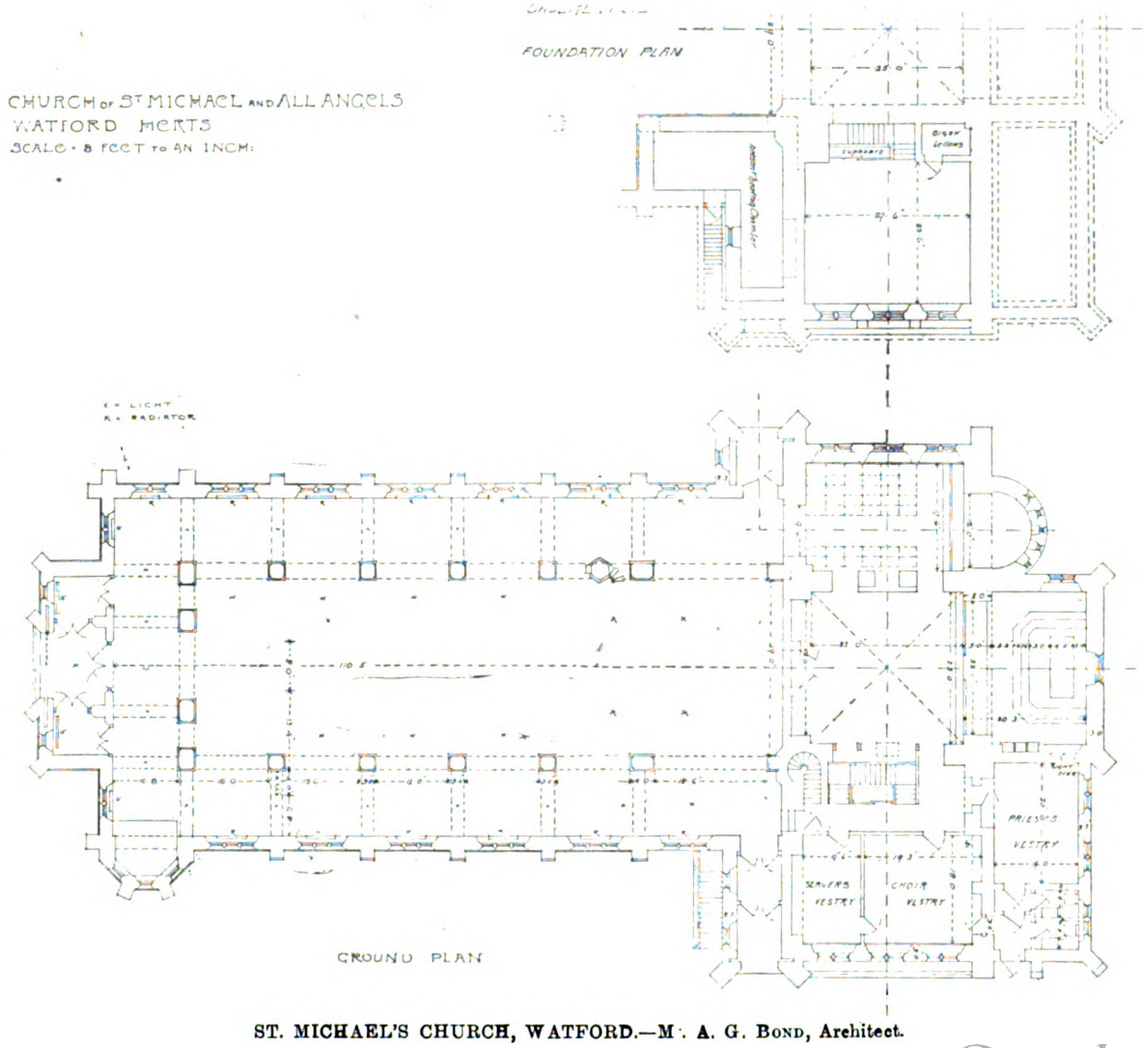
The contractors were Messrs. Brightman & Son, of Watford.

NEW PREMISES, SWANSEA.

These premises are being erected on the corner of Oxford Street and Waterloo Street, Swansea, for Mr. William Edwards, J.P., one of the great South Wales drapers.

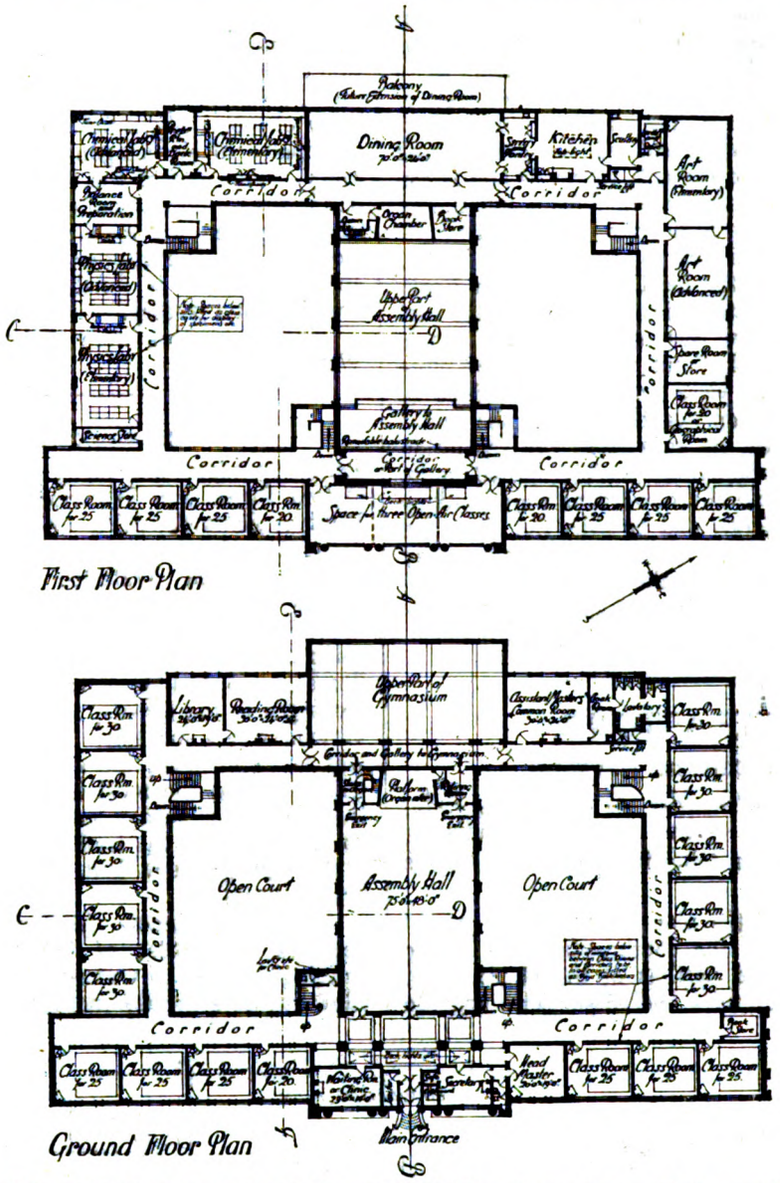
Oxford and Waterloo streets being particularly narrow (Oxford Street is slightly less than 40 feet and Waterloo Street not more than half of this), and both being main arteries in the heart of the town, it has been necessary to deal specially with the ground floor on the frontages to the streets, for the purpose of showing the various goods for sale. Before this re-building work was taken in hand, the shop-window show was of very little value on the most important shopping evenings of the week—*i.e.* Friday and Saturday—the streets being so crowded, and the traffic so congested, that the value of the window-show had, during recent years, become practically nil.

The shop-window frontages have therefore been designed in a series of islands, with an inner arcade running parallel to Oxford Street and Waterloo Street, admitting of a greatly increased window-show, and add-



ST. MICHAEL'S CHURCH, WATFORD.—Mr. A. G. Bond, Architect.

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DESIGN "A" FOR NEW WYGGESTON GRAMMAR SCHOOL, LEICESTER.—Messrs. GEORGE E. CLARE and G. PERCY SIMONS, Architects.

ing greatly to the convenience of the public desiring to view the goods displayed. The shop fronts have been carried out in gun-metal, with emerald pearl granite risers, all island windows being fitted with gunmetal sashes, for purposes of window-dressing, &c. The various shop entrances consist of very fine double mahogany doors, fitted with single-check action floor-springs. The ceilings of the lobbies and arcades are richly panelled in fibrous plaster.

All floors are carried out in terrazzo mosaic work of special design, the outside steps being in white Sicilian marble.

The super-structure is to be carried out in unglazed grey terra cotta.

These premises have been known for many years as the "Eagle Warehouse"; the fine corner feature is therefore surmounted with a large copper eagle standing upon a terra-cotta ball.

The design shown in the perspective is part of a larger scheme of rebuilding to be carried out in the near future.

The shop-front contract was carried out by Messrs. E. Pollard & Co., Ltd., of 29 Clerkenwell Road, London, E.C. The cost of the scheme when completed will be about £10,000, the architect being Mr. Charles T. Ruthen, Licentiate R.I.B.A.

NEW WYGGESTON GRAMMAR SCHOOL FOR BOYS, LEICESTER.

THESE are two alternative designs submitted in the above competition by Messrs. Clare & Simons.

In working out design "A" three points were carefully considered: (1) Economy in initial cost and upkeep; (2) administrative convenience; and (3) ample provision of light, air, and cross ventilation. All class-rooms are in close proximity to the main staircases, the largest possible number having a south-east aspect, and the majority are on the ground floor. The assembly hall in its central position is easy of access from all class-rooms, stairs, and main entrance; it has four emergency exits. The sanitary blocks are quite isolated, but are accessible from all classrooms. There are no enclosed areas or quadrangles, and all parts are open to the air both back and front. The estimate of the total cost for the complete scheme was £35,978.

The chief points of design "A" are also introduced into design "B"—viz., a large proportion of classrooms on the ground floor, ample provision of staircases, cross ventilation to all parts, convenience of access to the various rooms. An ample covered playground is under the assembly hall. The cost worked out to £42,800.

DESIGN FOR A FRONT DOOR.

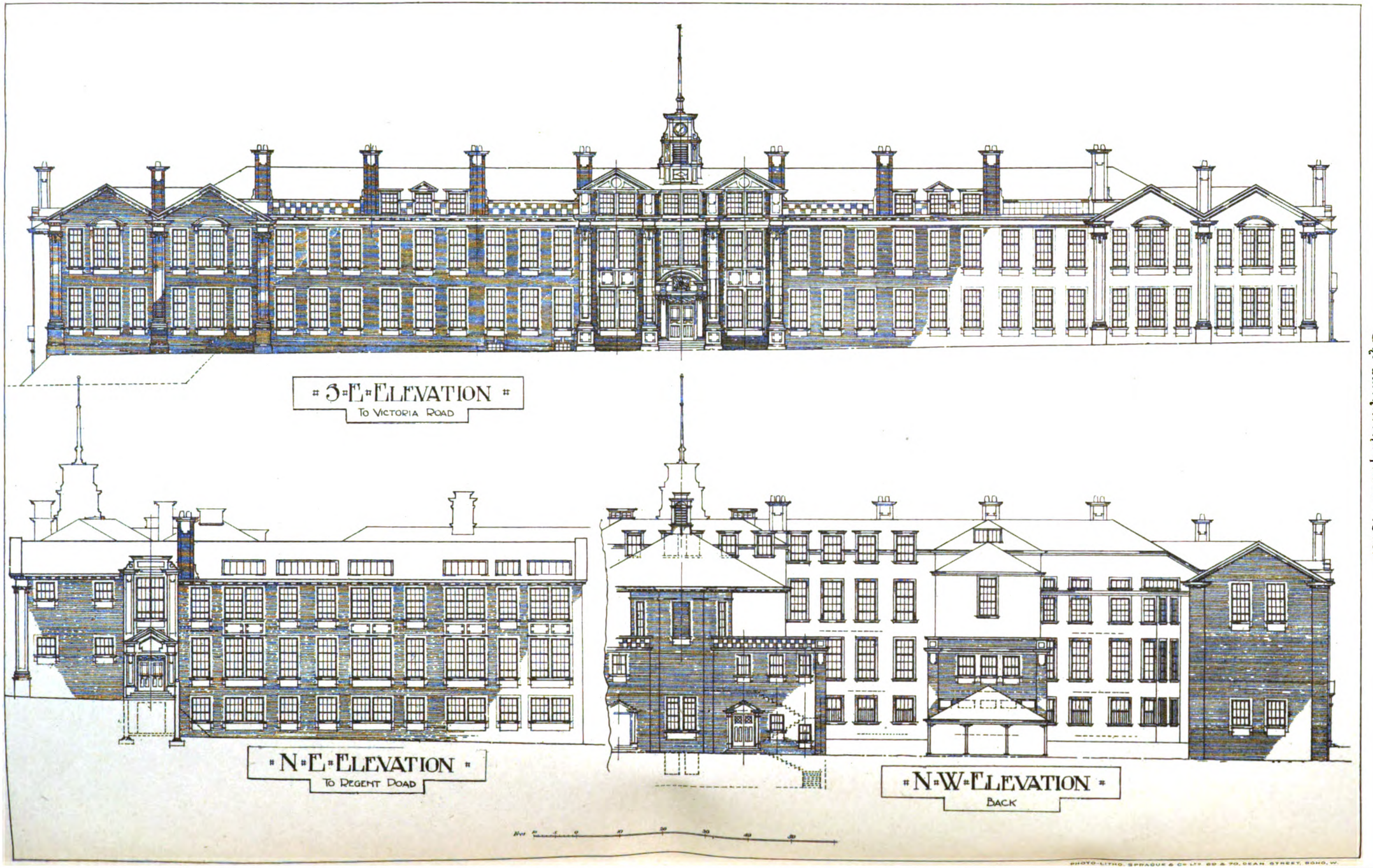
ALTHOUGH Gothic may be out of fashion for the present, the design by Mr. E. Swinfen Harris that we reproduce shows that the dialect in which an artist speaks is a matter of small moment, and that in what-ever "style" an architect may design he can still express thought.

PISCINA IN THE CHURCH OF SAINT SERGE AT ANGERS.

THIS drawing of a simple piece of French Gothic detail speaks for itself and needs no comment.

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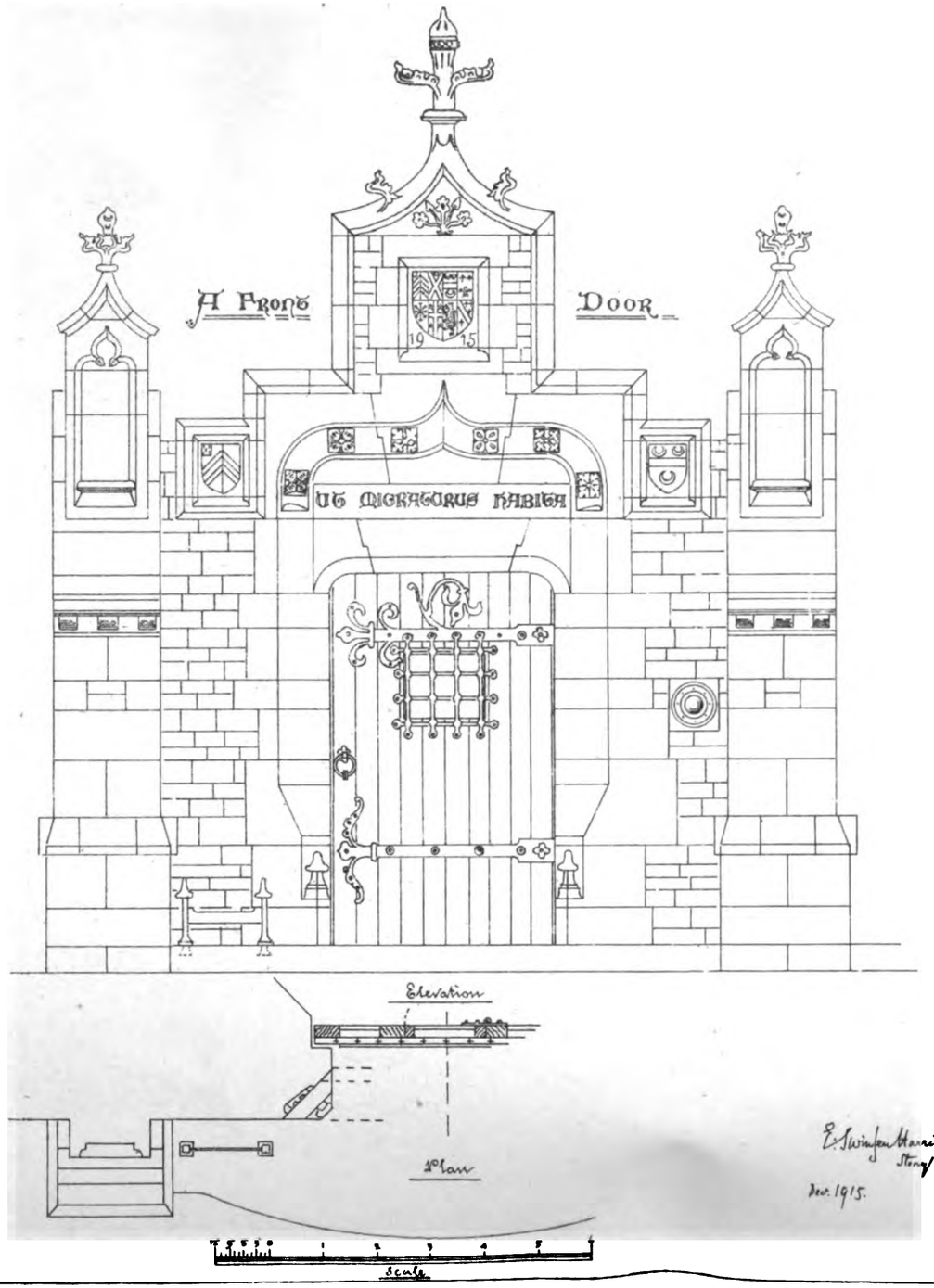
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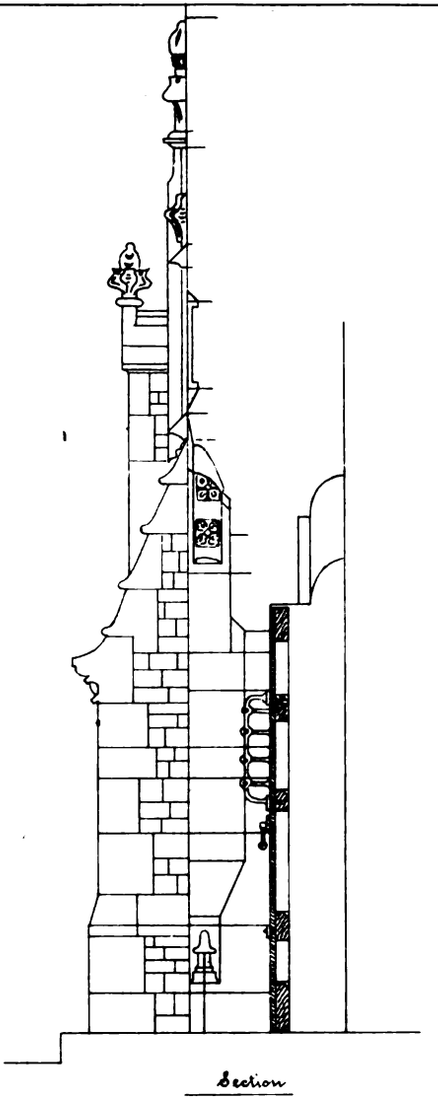


COMPETITION DESIGN FOR NEW WYGGESTON GRAMMAR SCHOOL, LEICESTER.

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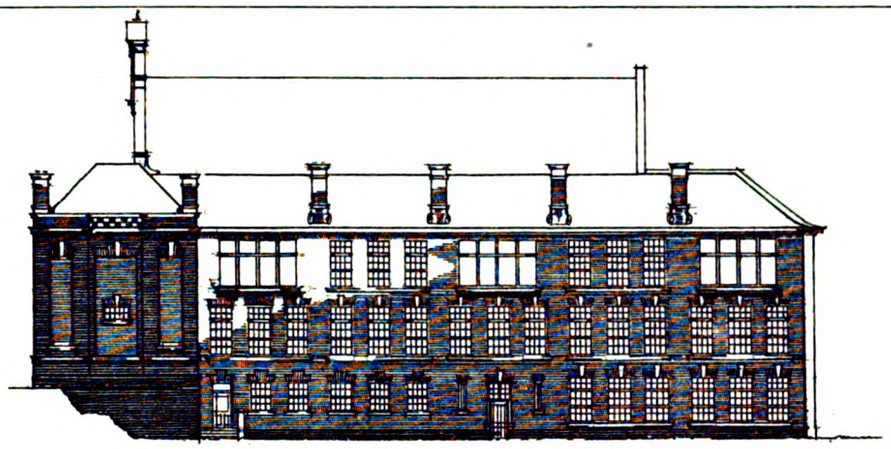
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Piscina in the Church of Saint Serge at Angers: Maine-et-Loire

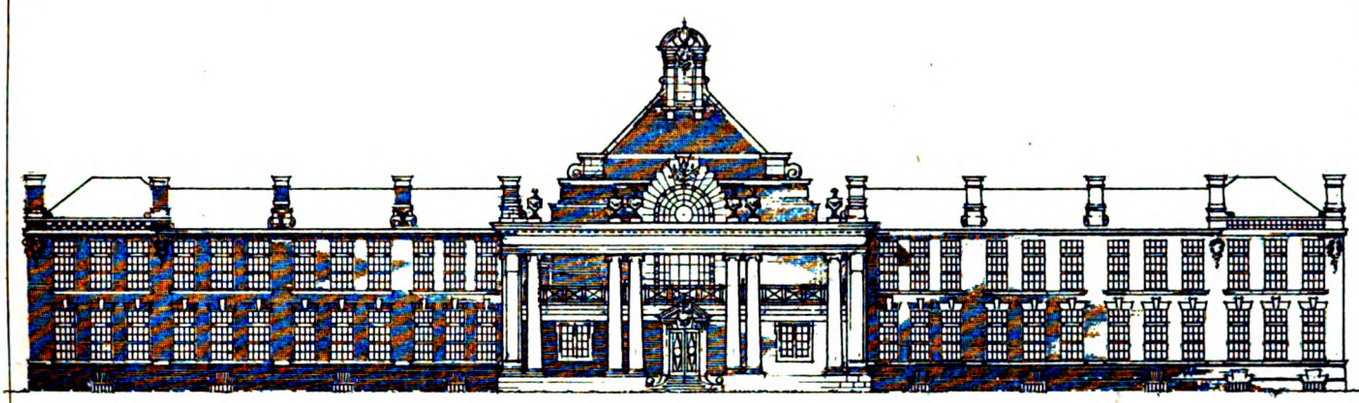
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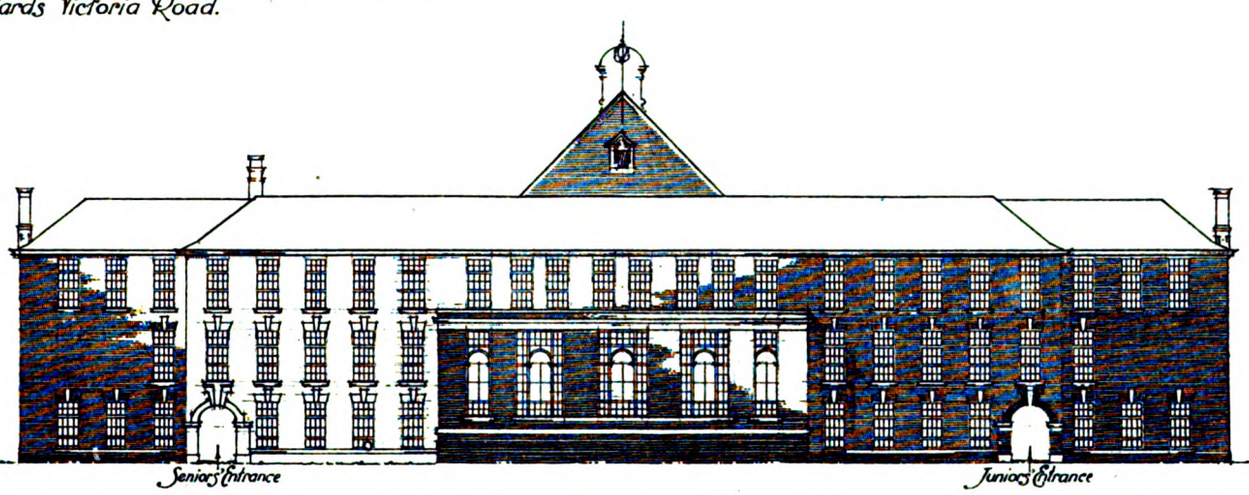
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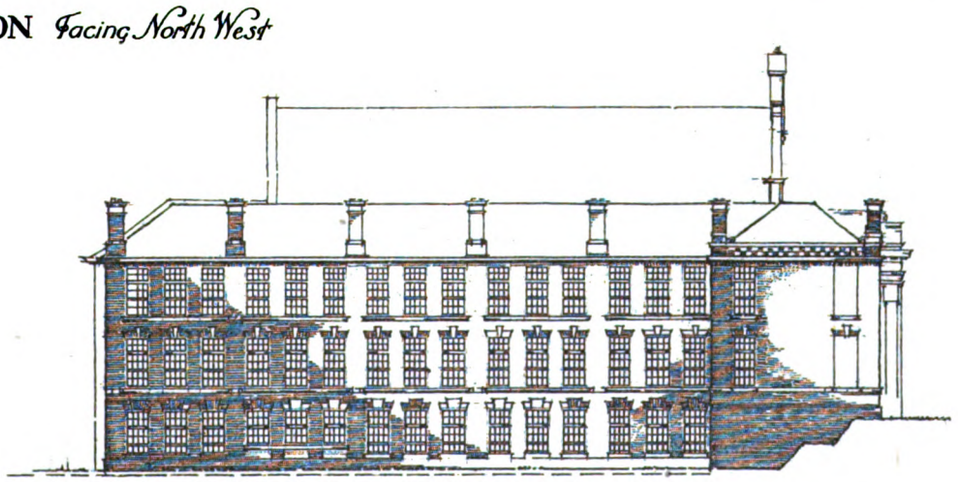
ELEVATION *Facing North East towards Regent's Road*



FRONT ELEVATION *Facing South East towards Victoria Road.*



ELEVATION *Facing North West*



ELEVATION *Facing South West towards Lancaster Road.*

Feet 10 5 0 10 20 30 40 50 100

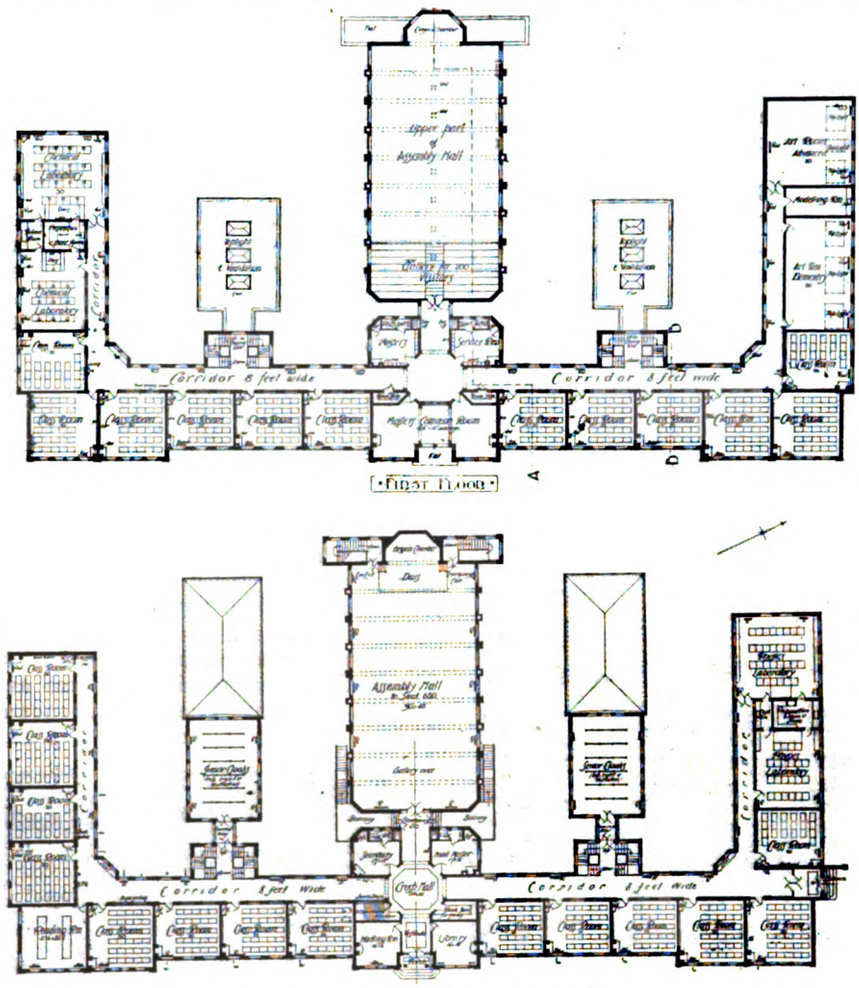
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COMPETITION DESIGN FOR NEW WYGGESTON GRAMMAR SCHOOL, LEICESTER.



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DESIGN "B" FOR NEW WYGGESTON GRAMMAR SCHOOL, LEICESTER.—Messrs. GEORGE E. CLARE and G. PERCY SIMONS, Architects.

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—XVI.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

GEOGRAPHICAL situation and political and commercial associations having affected so largely the history of architecture and art, it is necessary to divide this famous city of Venice into various parts—viz., the Romanesque-Byzantine Venice, the Gothic, and then the Renaissance Venice.

In architecture this city was the home and the workshop of many renowned architects. Passing over the very early period covering the building of the early St. Mark's, and the Byzantine reconstruction of this church (the ninth, tenth, and eleventh centuries), the works of Jean Participazio (in the ninth century), and Pietro Orseolo (in the tenth century), and attributed to a Greek architect, in the eleventh century, the same periods witnessed the erection of many palaces in the Byzantine style, very few of which now remain.

It is necessary to leave this very interesting time, when the influence of the commercial connections between Venice and the East left its indelible impress upon the monuments of that age, and when the magnificent and precious marbles and stones of various colours were largely imported from Far Eastern buildings and carefully sawn into thin layers and applied as facing to brick foundations or grounds. The architects of ancient Venice evidently made generous use of materials from early Eastern edifices, imported by the Venetians after their conquests. The church of St. Mark's owes much of its special attractiveness to the exceedingly unique and varied assortment of marbles and alabaster of many colours, and of porphyry, jasper, and other precious stones, brought by the Venetian fleets home to their city.

Amongst the earlier architects of Venice during the Gothic period should be named Giovanni Buon and his son Bartolomeo Buon, or sometimes recorded as Bartolomeo Bon and his son, whichever of the twain is correct. To them is ascribed the older portions of the Doges' Palace, and they are also credited with the Cà d'Oro, the palazzo situate on the Canal Grande, a fine specimen of this period, and contemporary with a portion of the ducal palace.

The examples of Gothic architecture in the various palaces upon the Grand Canal, with their large entrance colonnades, loggias on the upper floors, and similar arrangements of windows, are very striking and many are very beautiful. The early Renaissance work in Venice is particularly fine, and this style was largely used by the Venetians towards the end of the fifteenth century.

The foremost Venetian architects included Antonio Rizzo, of Verona, Pietro Lombardi, from Carona on Lake Lugano, Scarpagnino, Moro Coducci, Iàcopo Sansovino, of Florence (the architect of the beautiful library situate in the Piazzetta di San Marco), Antonio da Ponte, and that great architect, Andrea Palladio, of Vicenza. The works of these architects covered a period from 1430 to 1580. Palladio was succeeded by Vincenzo Scamozzi and Baldassare Longhena (1552 to 1682), then followed Giuseppe Sardi, Alessandro Tremignan, Domenico Rossi, Giorgio Massari, and others.

In sculpture and in painting Venice stands high in the list of the great centres of the world. In the former stand out prominently at the end of the fourteenth century two masters of this art in the brothers Giacomello and Pierpaolo delle Massegne, and in the following century much scope was provided for the Venetian sculptors, as well as for others from Tuscany and Lombardy, by the erection of the palazzi of the members of the nobility and other notable erections, as well as the great demand in those days for monuments within the churches.

In these particular fields there were among the many workers at sculpture the brothers Lombardi, Tullio, and Antonio; Antonio Rizzo, Pietro Lombardi, Giovanni Buon, and his son; Bartolomeo Bellano, of Padua, Ales-

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sandro Leopardi, and Iacopo Sansovino, the famous sculptor and architect already named.

In the realm of painting Venetian masters occupy a commanding position in the world's history of this art, although it was not until the early part of the fifteenth century that Venetian painting began to attract world-wide attention.

It was not until after 1365 when it is recorded that Guariento of Padua, and about 1420, when two masters,



THE RIALTO, VENICE.

the Umbrian artist Gentile da Fabriano and Vittore Pisano of Verona, were employed to adorn the palace of the Doges, that the native Venetian painters came into real prominence.

These early Venetian masters include Antonio Vivarini, whose first works are dated 1440, and Giovanni d'Allemagna, known also as Alemannus. Antonio, with Bartolomeo and Alvise, were known as the Muranesi, being of the family of Vivarini of Murano, the first-named two being brothers, and Alvise being the son of Antonio. The works of these three masters covered a period from 1440 to 1503. Then came the two brothers, Giovanni and Gentile Bellini, the former and Mantegna being the most noted masters of the Early Renaissance in Northern Italy. Afterwards follows a long list of famous painters. The Late Renaissance produced many great masters, the first of whom was Giorgione, then Iàcopo Palma of Bergamo, and then the great Titian, whose works are scattered throughout the various galleries of Europe, and who executed a prodigious number of pictures.

Some of Titian's most celebrated works are still retained in Venice, and his frescoes are in the Doge's Palace and at Padua, in the Scuola del Carmine, and the Scuola del Santo.

This master's works covered the long period ending about 1576, and contemporary artists were Sebastiano del Piombo, Lorenzo Lotto, and many others. Tintoretto, one of the most gifted of Venetian masters, worked to 1594, and contemporary with him was that most celebrated genius Paolo Veronese, who executed many of the world's most famous and magnificent masterpieces. Mr. Ruskin says "he is not to be fully estimated until he is seen at play among the fantastic chequers of the Venetian ceilings."

This short résumé will give some little idea of the wonder and wealth of Venetian painting.

Venice or the Italian Venezia, the city of the lagoons, is the capital of the province of the same name. The origin of the name is that of a country, not a town. To fully understand the early history of Venice, and of the Republic, it is necessary to be aware of this latter fact. Venice is divided into seven districts or areas—viz., Castello, San Marco, Cannaregio, San Polo, Giudecca, Dorsoduro, and Santa Grace. The four last-mentioned are on the south-west side of the Grand Canal, and the first three on the north-east side.

It is well to understand the Italian terms for the various streets, canals and squares, for in so doing one is greatly assisted in little exploring expeditions. The various names or titles indicate in a very helpful manner the kind of canal, street, or square. For instance, the principal centre of the city is the Piazza di San Marco, with the Piazzetta di San Marco and the Piazzetta dei Leoni adjoining; every other square or open space is given the title of campo, or if a small area, campiello.



THE PIAZZA, VENICE. BRONZE FLAGSTAFF PEDESTAL, BY ALESSIO LEOPARDI, 1500-05.

Calle and ruga a street, sottoportico or corte a passage, ramo a short street, and so on. Rio is a narrow canal, and fondamenta or riva a street flanked on one side by a canal.

Venice has a circumference of about 6½ miles and stands upon 117 small islands. The city consists of

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THE GRAND CANAL, VENICE.

about 15,000 houses and palaces, most of which are built upon piles.

The islands are formed by more than 150 canals and are connected to each other by about 378 bridges. The bridges are mostly of stone; but here and there one sees an iron structure which seems somehow very much out of place and out of keeping with the surroundings. The smaller canals are passable by small boats only, and the waters actually lap the walls of the houses in very many instances, and in others are separated from them by narrow footways or paths. The lanes and passages existing upon the various islands and between the buildings are a regular maze of the most complex kind, many of the passages being not more than three to four feet wide, and these form in the majority of cases the main entrance-ways into the high dwellings on either side. Several attempts were made to take photographs of some of these very narrow alley-ways; but their extreme narrowness preventing the rays of the sun from penetrating into their confined spaces rendered successful pictures almost impossible.

When this wonderful city becomes flooded the scenes presented must be unique and altogether strange. The means of traffic from one part of the city to another appear to the Englishman already sufficiently difficult, but in the periods of flood these difficulties must be accentuated to an almost inconceivable extent. The floods on the mainland are caused by the continual downpour of rains upon the high Alps in the immediate vicinity; but, as already mentioned, the sea and wind are alone responsible for the floods in the city.

Before the canalisation of the rivers Piave, Brenta, and Sile, when the mouths of these rivers were diverted from the waters of the lagoons into the open sea, the floods in the city were accountable partly to the flooding of the mainland, on the one hand, and to the sea and the wind on the other; but since the diversion of the waters of these rivers, the city of islands becomes devoid almost entirely of dry land, by the high winds stirring up the waters of the Adriatic for a number of days in succession. The high seas then beat against the long narrow lidi and prevent the tidal waters escaping from the lagoons into the open sea by means of the various "porti," and then the water begins to rise through the various gulley openings and slowly but surely the pavements are covered and the large squares soon become lakes, and this wonderful city becomes more wonderful still.

One of the great features always associated with Venice, and without which no picture of the Grand Canal or of the lagoons would be complete, is the picturesque gondola and equally picturesque gondolier. These artistic little crafts are the taxi-cabs of Venice, or perhaps it would be more correct to say that these little vessels are the hansom cabs of the city; for although the process of transition is slower, as the hansom cabs of London were compelled to give way to the faster taxi-cabs, so the gondola of Venice, it would appear, and unfortunately so, will eventually have to give way to the fast petrol launch, although at the present time the popularity of the gondola, with tourists more especially, is as great as ever. The gondola is without doubt the most luxuriant vehicle in the world, and it would be impossible to imagine a more picturesque finish to the already beautiful scenes upon the various waterways of this ancient city than these long, low, black skiffs, appearing so typically Venetian that it would be almost correct to say that Venice without its gondolas would not be Venice at all. The various pictures illustrating these notes will provide the reader with a number of views of these beautiful little boats.

There is no jolting so well known to the English traveller, no noise of wheels or smell of petrol, no screeching of horns or clouds of dust, no rattling or grinding of gearing or snorting of engines. Just the slow, gentle swaying of the perfectly poised carriage, and the gentle ripple of the waters as the boat slips on its journey past palace steps and portals, and picturesque coloured mooring posts projecting above the waters. The guiding of these little craft with their swan-like prows by their expert oarsmen, who by a gentle turn of the oar guide the boat in any direction, is certainly an operation calling for great admiration. The gondola is essentially a vehicle for leisure, and if one would view the beauties of this city of the sea at ease, there is no better method than the hiring of one of these quaint old-time gondolas.

These craft, it is said, are first mentioned in a document dated 1094, and it is perhaps of interest to shortly describe their construction.

The gondola is provided as a rule with seats for four or six persons, and has a low-roofed covering or cabin, known as a "felze," which can be removed at will. A law passed in the fifteenth century provided that all gondolas were to be painted black. Their construction is carried out with the greatest of care, and considerable skill is displayed in the workmanship and design of these boats, which are flat-bottomed. The various dimensions are of great importance and make considerable difference to the speed and durability of the boat. The heavy-ornamented prow, called a "ferro," is partly intended as a measure of the height of the bridges, and resembles a halberd. No bridges can be passed unless the ferro, which is the highest part of the craft, clears

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them. In addition the ferro partly counterbalances the weight of the boatman or gondolier, who stands at the reverse end of the boat on the "poppa." The gondolier is popularly called the "poppa." The weird cries or calls of the gondoliers on turning corners are somewhat melancholy, and includes besides those already mentioned, "sia premi," keep to the left, and "sia di lungo," keep straight on.

The population of Venice, about 25 per cent. of which are to-day paupers, and which was 200,000 before 1797 and dwindled to less than half that number after its dissolution as an independent State, is now about 150,000.

The centre of attraction in Venice is the Piazza of St. Mark, a magnificent square, paved with trachyte and marble, and usually called "La Piazza." This square, together with the Piazzetta and their surrounding buildings, is the nucleus of the historical city, and within the



MOSAIC OF OUR LORD ENTHRONED BETWEEN OUR LADY AND ST. MARK, IN THE LUNETTE OVER THE CENTRAL DOOR, CHURCH OF ST. MARK, VENICE.

confines of this nucleus one finds the best examples of the Venice of the three architectural periods before mentioned—viz., the Romanesque-Byzantine, the Gothic, and the Renaissance.

It is quite unnecessary to point out that St. Mark's is, of course, by far the most important building in Venice, and in studying the monuments in this ancient city much time should and must be devoted to this truly wonderful edifice.

In fixing, as the writer did, upon headquarters, regard should be had for this important consideration, for within the area just named there is ample to occupy the time of the traveller for many days. The nearer one resides to the Piazza di San Marco the more frequently can visits be paid to this centre of architecture, and in this way the unnecessary crowding within a limited period the study of such a mass of intensely interesting subjects is obviated, and the better one is able to fully grasp the beauty and the grandeur of the subjects.

The Piazza San Marco is 191 yards long on the west side, 61 yards on the east, and 90 yards in width, and affords very striking evidence of the ancient glory of Venice. On the north, south, and west sides this square is enclosed by imposing buildings. On the north and south sides by the Procuratie Vecchie and the Procuratie Nuove and Palazzo Reale, and on the west side by the Nuova Fabbrica. The east side of the square is bounded by the church of St. Mark and the Piazzetta. This is a marvellous old square, with its crowded pavements and bright shops and cafés, sheltered from the broiling sun by the system of arcades round three sides. It is really the heart of the city, and full of bustle and life.

The large number of pigeons, numbering many hundreds, are quite tame, and, down to the close of the Republic, used to be fed at the public expense but are dependent to-day for their food upon charity. By all appearances these feathered tenants of the nooks and crannies in the famous buildings surrounding the square fare very well from the generosity of the visitors and children, assisted by the loungers who infest this area, and offer little packets of corn and peas for sale. It is recorded that an old custom demanded that pigeons were sent out from the vestibule of San Marco on Palm Sunday, and although this custom is not now continued, these birds still continue to nest in all parts of the surrounding buildings. Dealing with the architecture, sculpture, and mosaics of Venice, one must necessarily start with St. Mark's, and therefore with the Byzantine period.

(To be continued.)

CHARING CROSS BRIDGE.

THE House of Lords, in debating the second reading of the South-Eastern and London, Chatham and Dover Railways Bill, have done well for London in requiring that the proposed widening of Charing Cross railway bridge shall not be considered apart from the wider question of the desirability of an improved general traffic bridge at this point, and have thereby infused courage into the Parliamentary Committee of the London County Council, who have considered the resolution of the Council of March 21, 1916, "That it be referred to the Parliamentary Committee to consider and report on the advisability of presenting in the second House against the South-Eastern and London, Chatham and Dover Railways Bill a petition seeking that the plans for the alteration of the Charing Cross railway bridge shall be submitted to and approved by the Council as being the central administrative authority in London," and now report as follows:—

On January 25, 1916, we reported that this Bill had been deposited, and the Council gave instructions for a petition against the Bill to be sealed and presented if necessary. The purpose of the Bill, so far as it affects Charing Cross railway bridge, is to enable the South-Eastern Railway Company to alter and strengthen the down stream side of the bridge. The part of the bridge proposed to be strengthened is about 50 ft. wide, or about half the total width of the structure. The bridge consists of lattice girder spans, and we understand that owing to the increase in weight of modern rolling stock the girders are insufficient in strength, and that consequently it has been found necessary to regulate the number of trains passing over the bridge at any one time. In order to meet the difficulty it is proposed to reconstruct four of the piers in the river and to insert an arched form of support under the girders. The bridge at present consists of six spans, each of 154 ft. of waterway, and as altered would consist of four spans, each of 147 ft., and two spans of 140 ft.

In accordance with the instruction of the Council on January 25 a petition was lodged in the House of Lords,

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but it deals only with the protection of the Council's interests affected by the Bill. In considering the terms of the petition we had before us a memorandum from the Improvements Committee, referring to the fact that the Council had from time to time considered the question of dealing with this bridge with the object of improving the amenities of this part of the river, but stating that having regard to the fact that the present time of stress was not opportune for dealing with the matter, they had decided not to offer any observations on the Bill. We also had before us letters from the Royal Institute of British Architects and the London Society, in which it was suggested that the Council's opposition should be in the direction of preventing the spending of a large sum of money, which was stated to be estimated at £150,000, upon the existing bridge, especially in view of the possibility of the station being removed to the south side of the river, and the need for the substitution of a road bridge for the existing structure. It appeared to us that, having regard to the exceptional circumstances prevailing, the Council would hardly be justified in making representations to Parliament in the direction suggested. We also considered a suggestion that action should be taken with a view to altering the design or otherwise improving the amenities of the existing structure, but we came to the conclusion that the Council could not, at such a time as the present, reasonably ask Parliament to place upon the company a liability to incur expenditure which was not absolutely necessary. The petition was therefore restricted to matters directly affecting the Council's interests.

With regard to the suggestion contained in the resolution that plans of the bridge should be submitted to the Council, it should be mentioned that it has not been the practice in the past to ask Parliament to require plans of bridges crossing the Thames to be submitted to the Council for approval, as this is a matter which has been within the jurisdiction of the Thames Conservancy and their successors, the Port of London Authority. We understand that the Port of London Authority, in accordance with the usual practice and as was provided in the Corporation of London Bridges Act, 1911, which authorises the construction of the proposed new St. Paul's Bridge, will ask for the insertion of a clause requiring plans to be submitted to them for approval, and it is possible that exception might be taken to any proposal which would result in duplication of control in this respect. The question of the requirements of the traffic and the amenities of this part of London as affected by the proposals contained in the Bill will, however, be considered by Parliament, as upon the second reading of the Bill the House of Lords, upon the motion of the Earl of Plymouth, resolved: "That it be an instruction to the Committee to take into consideration the requirements of the traffic over the river at this point, and the effect that this Bill, if passed, will have upon them, and to hear evidence from the Royal Institute of British Architects, and the London Society, and others upon the treatment generally of this very important part of London." Without, therefore, dealing with the question of expediency, it does not, in the circumstances, appear to be necessary for the Council to take any action in the direction of requiring plans to be submitted to the Council.

The Improvements Committee have, however, now further considered the matter, and have expressed the opinion that the Bill should be opposed with the object of securing its rejection so far as it relates to Charing Cross bridge, in order to allow time for careful consideration, by all parties interested, of schemes having for their object the improvement for the purposes of the general traffic and amenities of London of the area occupied by Charing Cross station and bridge. As before stated, the Improvements Committee considered the proposals before the Council's petition was deposited in the House of Lords, and decided, for the reasons mentioned, not to offer any observations upon the Bill. They now inform us that in coming to this decision they believed that the alterations to the bridge were projected with a view to their being immediately carried out and completed in time to be of material advantage to railway traffic during the war, but that they are now informed that it is not proposed to carry out the alterations until after the war. They also mention that since arriving at their original decision the letters from the Royal Institute of British Architects and the London Society have been received, and also refer to the fact that since they came to such decision the House of Lords has passed the resolution before mentioned, and suggest that it is incumbent upon the Council to put before the Committee of the House of Lords its objections on any ground to the present grant of the powers sought by the company. The Improvements Committee further point out that expenditure upon the bridge would increase the compensation to the company in the event of an improvement scheme materialising.

The question of the desirability of effecting an improvement by the removal of the railway bridge and the construction of a bridge for general traffic comes within the order of reference to the Improvements Committee, and upon this matter we do not therefore desire to submit any observations. With regard, however, to the statement that it is not proposed to carry out the work to the railway bridge until after the war, it must be pointed out that, however important it may be, in order to deal with the railway traffic efficiently, that the work should be done at the earliest possible moment. there may be insuperable difficulties in the way of carrying out a work of this nature before the termination of the war.

The Finance Committee have considered the proposal of the Improvements Committee, and have informed us that they have no objection thereto provided that it is made perfectly clear in any action which may be taken that the Council's freedom of action in the matter of any scheme having for its object the improvement of the area occupied by the station and bridge is in no way restricted.

THE PRINCIPLES AND POSITION OF TOWN PLANNING.*

By W. R. Davidge, F.S.I.

In Great Britain the creed of town planning may be expressed briefly as "more air, more accessibility, more attractiveness!" or, in other words, health and social well-being, particularly as applied to the prospective building land around our towns. In conjunction with this there is at the same time, so far as private estates are concerned, a very evident effort, in some cases almost a straining, after the picturesque. In modern garden suburbs, equally with the mediæval town, the effort after picturesque features has secured many charming examples, which are a welcome relief from the drab of the everyday town. The Government housing scheme at Woolwich, built during 1915, is one of the most successful examples in this respect. So far, however, as can at present be seen, the tendency of municipal town-planners under the powers given by the Act is not altogether in the same direction.

Municipal surveyors, as a body, fully appreciate the great possibilities of town planning from the health and amenity point of view, but so far, at any rate, the "picturesque" is entirely in the province of the private owner and his architect, aided or retarded by the jerry-builder.

In Paris the desideratum is more often the spectacular or monumental art of "*construction des villes*" in the grand manner.

In Berlin "*der Städtebau*" represents the same ideal of imposing public buildings, and monumental-looking structures, which are in reality tenement dwellings. As a well-known German professor said in 1910 at the Royal

* Abstract of Paper read before the Surveyors' Institution, April 10.

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Institute of British Architects' Conference: "What we in Berlin try to do is, at all times and to the utmost of our power, to *impose* upon the stranger!"

American cities mostly regard city planning from one of two ideals, either the "civic centre" ideal or the "rapid transit" ideal, both of which our American cousins would describe as "good business propositions," and business is the keynote of all sound proposals.

Colonial towns are, as is well known, mostly laid out (for the convenience of the surveyors) on north and south lines, with all streets at right angles, and, until quite recently, this tendency has manifested itself in the lay-out of practically all towns which have had to be developed rapidly, generally in the absence of any special natural features.

It has been necessary in nearly all cases to peg out and sell plots of land rapidly, and the Colonial surveyor, in laying out a town, has almost unconsciously come to regard it as "cutting up so many sections," simply and solely "land jobbing." The idea of a community deliberately moulding its own growth to its future needs has so far hardly been realised.

So much for varying national ideals; but when we consider the varying character of the English town itself, we find almost as widely varying ideals. Liverpool with its docks, and Manchester with its commerce; each has quite different problems from, say, the special problem of London, or of a pleasure resort, such as Bournemouth. The suburban communities too, take Walthamstow for an example, have a problem all their own.

The Need for Town Planning.—One thing that stands out clearly though, in the maze of these different national and local characteristics, is the paramount need for some form of town planning.

Whether one sets out with the purpose of sweeping away slums, or of providing for the future growth; whether one is an enthusiast for parks and open spaces, or merely desirous of the commercial advantages of rapid transit and business facilities, all nations and nearly all communities are agreed that, if it is reasonable to plan the alterations to a house that one intends to inhabit, it is still more desirable to plan the town and its extension; hence the first general principle which we can all accept is the universally recognised need for town planning.

Our first accepted principle, then, is: *A town plan is necessary.*

Individuality.—Following on this, however, must come the recognition that such a town plan is not a stock article, but must be made to the measure of the district. National characteristics and aspirations, as we have already seen, have resulted in widely varying national conceptions on the subject of town planning, and localities vary as widely in their views as to development, particularly as to the kind of development which is suitable for their town. *A town's plan must be its own.*

Community Control.—The English Town Planning Act of 1909 has focussed public attention on the subject, but it should be remembered that this Act was long preceded by the Italian, Swedish, and Prussian Town Planning Acts, all of which provide not only for town extensions, and new streets being laid out on the lines prescribed by the municipal authority, but also give the authorities much greater powers of purchase or expropriation.

The one thing, however, which all have in common is the need for community control. No one in this country would, in ordinary circumstances, consent to the bureaucratic dictation which is so evident in the municipal affairs of Central Europe, but nevertheless *some form of community control is essential.*

Tendencies in Town Planning.—So far, in English town-planning schemes, there has been a growing tendency to draw up legal restrictions which have a negative value only in preserving the amenities of a district. Negative restrictions alone are insufficient.

In the light of the experience of the past six years, that there shall be a powerful constructive expert control is equally necessary. Some years ago Mr. Paul Waterhouse suggested that there should be appointed to each district throughout the country an architect and surveyor, who should have charge of all constructive design, and whose dictum should be final.

Without going to this length, however, there is no doubt that the surveyors throughout the country already exercise a beneficial control, though the powers given by the various by-laws and building Acts hardly in any instance give control over design.

It is becoming increasingly evident, however, that if the development of our towns under the Town Planning Act of 1909 is to be any advance at all on the current estate development prior to the Act, it will be necessary to have much more control over the design of buildings than is the case in the schemes so far adopted.

The Ruislip-Northwood Scheme (Section 56), it is true, reads as follows:—

"If, having regard to the nature and situation of the site of any building or buildings proposed to be erected or altered, or to the character of any buildings erected, or in course of erection, in the neighbourhood of such site, the council are of opinion that the character of the building or buildings proposed to be erected or altered would be injurious to the amenity of the neighbourhood, whether on account of the design or the undue repetition of the design or the materials to be used, the council may require such reasonable alterations to be made in regard to the design or materials as they may think fit, and may require the plans to be amended accordingly.

"If any dispute or difference shall arise between the council and any other person as to the requirements of the council under this clause, the same shall be referred to a single arbitrator to be appointed by the President of the Royal Institute of British Architects on the application of the council or such other person."

This is an excellent example, which at present, however, stands alone. It is evident, though, that there are many cases in which even this will not go far enough. So far the most successful undertakings are estates in one ownership, in which one architect has had real control of the development, and it seems reasonable to infer that the nearer a municipal town-planning scheme gets to this ideal the greater will be the success attained.

Zone System and Commercial Districts.—The division of a district into building zones in which different building regulations apply has not found favour in English practice, although separate districts for buildings of the warehouse or factory class have been adopted at both Ruislip and Birmingham.

From the point of view of protection of property-owners in residential districts, some form of restraint as to the location of commercial buildings is clearly necessary, and, so far as the Act has gone, the constitution of separate areas for factory and commercial purposes has been carried out without difficulty.

As so many of us are aware, however, the real test of such restrictions will be felt in the next generation. With the continual growth and prosperity of a town the commercial area will surely expand, and unless adjacent space is provided for expansion, the business side of the town will necessarily overflow into the residential quarters. In all old centres this alteration of use is continually before our eyes. In New York, within the last few years, business which formerly was done in Twenty-third Street has now moved up as far as Forty-second Street, and an entirely new shopping district created.

Even in London the one-time quiet residential Hanover Square is rapidly assuming a commercial character, and the once peaceful quiet of Soho Square has long been broken into by the pickle factory. Such changes are in the nature of things, and however hard and fast the restrictions of a town-planning scheme may be drawn, it is evident that unless the plan itself also provides for extension, mere legal restrictions will have no more force than the out-of-date paper restrictions of many one-time high-class residential estates, more honoured in the breach than in the observance.

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Provision must therefore be made for the gradual expansion of commercial districts.

The phenomenon of the overflowing of business into the residential areas of a town is constantly before our eyes, but it is curious to note that in nearly all towns, no matter how old, the heart of the business community still has its nucleus in the area of the original settlement.

No matter how Oxford Street or Kensington High Street may flourish, the City of London still holds its own so far as the business community is concerned. The same is true of New York, where the nerve centre is still in the original commercial settlement at one time bounded by Wall Street.

In England, although land values in our towns have reached a considerable height, there has been no great demand for very tall buildings, and it is probable that the present height limits, where established, are sufficient to check this tendency.

The limitation of the number of houses per acre has, however, been enthusiastically taken up in this country. The effect of such a limitation must be at least twofold. It tends first to spread the town, and consequently the values, over a larger area, and by restricting the use to which land is put must to that extent decrease the value per acre of land which is already ripe for building. At the same time it will tend to give a corresponding increase of value to land further from the town. Its effect on the already over-built city areas cannot fail to be beneficial, for by fixing a standard of suburban development—a high standard of amenity, and a comparatively low standard of price—it will be financially impracticable to force up values in the built-up areas above a reasonable limit, and for the same reason it will not pay to unduly increase the congestion of building.

The difficulties of fixing a suitable "land unit" are, however, been largely dictated by land registry conham systems are worthy of study in this respect.

Twelve houses to the acre is a reasonable maximum, but where land is already being developed for cottage property, as many as eighteen to twenty houses per acre have been allowed in the case of the first two Birmingham schemes. In any case it is evident that some discretionary power to exceed the limit in particular cases or particular parts of an estate will certainly be taken in practice.

Given common-sense, however, in both the landowner and the municipality, no difficulty should arise in administering an admittedly difficult point.

In some of our colonies, notably in Queensland and in New Zealand, there has for many years been a statutory limitation of the minimum size of plot which can be bought or sold, and in both colonies this has been fixed at 16 perches, or 1-10th of an acre.

This practical limitation of 10 plots to the acre has, however, been largely dictated by land registry considerations, and there is no restriction on the number of buildings per acre. In the Colonies, where nearly every house has its quarter acre, the need has not yet been felt for restriction, but it is remarkable how, even in the Colonies, all large blocks are continually being subdivided into smaller and smaller parcels.

(To be continued.)

LANDSCAPE PAINTING.*

By H. HUGHES-STANTON, A.R.A., R.W.S.

(Concluded from last week.)

JOHN CHROME is a very important link in English landscape. He was the first of a school of painters, afterwards called the Norwich school; it included John Sell Cotman, Stark, Ladbroke, and Vincent among its most notable members. Chrome's art, like that of Gainsborough, was faithfully founded on his appreciation of the Dutch school; he developed a very marked style and shows us a finer, a richer technique than the school he followed, which seems to have come to the British school through Richard Wilson.

His art is a fine manly exposition of nature, imbued with the utmost sympathy and love of it. He painted the most demure subjects of the woods and fields, and to these simple themes he gave great style. The modesty of his approach to his subjects shows the supreme achievement with which he accomplished them. His skies are well drawn, the colour and atmosphere of his pictures are very true. He is a most sincere lover and student of nature, and did much to further the art of landscape painting.

Outside this group we have George Morland, quite a genius. His landscape art is fascinating with its technique, is facile with a fine full brush and a rich palette. His work has a very fresh outlook. He is original and distinctive.

In England we had Turner, born in 1770, the greatest of all landscape painters, the son of a barber, who rose to the highest pitch of fame. His position in art is only equalled by that of Shakespeare in literature. A genius and a most ardent and indefatigable worker, by his great industry and infinite care and love of his work he made himself a painter unequalled in any school. His drawings with the pencil are wonders of skill. He assimilated the art of previous old masters and was imbued to the utmost with traditional teaching. We see in one period of his work how he is influenced by the Dutch and Flemish painters, but it is to Claude that he pays the great homage of frankly basing his compositions on the then famous works of that great master. At the same time he went further, and tried to give a truer and more sensitive value of the real tone of light. In this he succeeded to a remarkable degree with a much freer and more wealthy technique and a more luscious and brighter palette.

As I have already said, Wilson started the English school; Turner carried forward the influence and tradition of Wilson. He maintained the magnificent breadth and lofty feeling for design, and went further to free the school of any trammels. He went boldly to nature and with the most exuberant feelings of wild joy and freedom he broke right away; and, having mastered tradition and having achieved the greatest victory on accepted lines of thought, he set out to find and conquer a new field.

Turner was an ardent lover of nature, and must have had a most receptive mind; his memory of things seen must have been a great aid to his fine imagination, which he possessed in the highest degree; it was an imagination controlled by the most logical and truthful facts of nature.

Constable had a consummate knowledge and love of nature; he knew the sky so well he could anticipate an effect, and with this knowledge and perfect technique as a painter he could rapidly seize the moment he designed to portray and infuse it with his own individuality. His is a fine and moving art, very exhilarating—the delightful rendering of a transitory moment when rain has just passed, or of a threatening storm that creeps over the brightest day, the freshening winds that make landscape full of movement, are all made real to us in his work.

You feel a rhythm that moves you as a breath of air; it is vital, it is strong and pure as health. His compositions are very carefully studied and selected, although he broke right away from the classic style, and one can regard him as a great pioneer of the modern landscape school. He attacked his subjects with an untrammelled mind, went straight to nature and painted her exactly as he saw her; and it was this uncompromising attitude that gave such a shock to his time when a great deal of landscape art was still cloyed with conventional tradition. But his work was so fresh and vigorous that it soon established and opened the way for a finer and more faithful representation of nature.

Before leaving the English school mention must be made of Bonnington, who had a delightful style and great freshness of colouring; and although he died young his

* From a Lecture delivered at Carpenters' Hall.

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influence in landscape was marked both here and in France.

Peter de Wint also did most excellent work and must be considered one of the pioneers of the British school.

David Cox, Lee Brindle, William Muller, and John Linnell carry us to the middle of the nineteenth century, and are all interesting and most sincere painters.

The masters of what may be called the Modern French school bring with them a new and romantic influence into landscape art; they bring a human element of feeling into it that you can trace nowhere so fully before. There is a greater gaiety, greater depression, greater despair than you ever found in the works of this branch before. The feeling and mood of the painter is made manifest in his work, selection is felt devoutly and strongly, time of day, the fall of shadow, the great stillness of nature—in fact all the moods we feel in communication with nature become the essence that the artist felt his highest to give. It is thus that emotion came to landscape, a new and beautiful thing. It is a great joy to feel your emotions touched so subtly by the power of interpretation. This school grew till it reached a climax in Daubigny, and the new school of the so-called Impressionists began to assume a new phase in France.

It is to Corot we turn for the inspiration of new thought in landscape art. He was greatly influenced by the classic tradition which he absorbed into himself, but which he kept quite apart from trammelling his art. And you get in his work a blending of the finest traditions with a new insight into the true illumination in landscape. Like Turner he broke away from the conventional brown shadow, and saw reflected light and a great transparency and luminousness in all the dark portions of a landscape. The shadows were painted in their true values and nature was made the true goal at which to aim. We get a fine balance and arrangement in composition, with a true regard to nature always, and a feeling of poetry and romance which seems to come into this new world of truth, because it is so sincere and so closely sought after. Corot was a great artist; not so great as Turner (he had not the imagination and impulse), but he painted intimately the beauty he saw in the living verdure around him in a manner that was truly his own, and in which only one who loved it could have so well succeeded.

Jacques François Millet was perhaps more than any other painter of the Barbazon school the most intimate and sensitively idealistic. His art has a wonderful charm difficult to describe; it was most intensely sincere, and he brought to his pictures of peasant life a shadow of the sublime which clothed their world with sanctity. Quite a new world of genius is here; he is absolutely original, and conveys through his art his deep feeling of the great sentiments that appealed to him through the nature he loved.

In Charles Daubigny we have one of the most interesting of this school; perhaps slightly influenced by his elder confrères, he owes some allegiance to both Rousseau and Corot, although the influence is in no way felt in his art. Of all the French painters of this period he is most probably the one who has been most influenced by our English painter Constable. Daubigny is very fascinating, he has great freshness and a beautiful sense of quality and sparkling liveliness in his work. There is a true touch of genius in the ease and lack of affectation in all he does.

As a painter I strongly believe in our own times. There is much art being done to-day that will live in the future. Each decade in the past has given something new and great to a period; so I feel it will be found our own modern painters have given a new impetus to art that would have died were it not for the infusion of new ideas. The work of many painters recently dead have found places among the immortals. The Brothers Maris and Mauve in Holland; in France, Boudin and Cazin are now very highly esteemed; here Cecil Lawson has found a very high place, though dead barely twenty years, and will, I think, rank much higher; and Baxton Knight, a fine painter recently deceased, whose pictures are now being earnestly sought for. A mention of Sir Alfred East must be made, whose work was on a high level, just as I feel that the modest work of J. W. North will also be the care of the astute collector. He has a most original and beautifully delicate perception of nature, truly a new note in landscape and an influence in his time with Fred Walker and Mason. Each real truth sends farther away that which is not a real thing, so it is that art moves along, one period acting as a lever for the next in front of it. There are many living landscapists who are just as sincere as any in the past, and who will leave the world a legacy of talent for another generation to value at its true and real worth.

NEW AND CHEAP MATERIALS FOR COTTAGES.

(Concluded from last week.)

Ground Floors.—It is usual and convenient to lay a solid concrete floor finished with smooth cement or tiles in sculleries and pantries and to have boarded floors for the living rooms. These are usually laid on joists with sleeper walls and a ventilated space below. Another method is to lay fillets on a concrete bed and to nail the boards on these. This gives a good solid floor without spring, and it is often the most economical method. It is often compulsory, and at any rate it is an advantage, to lay a rough concrete floor over the ground even when there are joists, and it is very little extra expense to thicken this layer and make it suitable to take the fillets. It is often, too, a way of getting rid of surplus soil which would otherwise have to be carted away. The cement facing and the fillets should, before the boards are laid, be coated with one of the excellent preparations available for the purpose.

Yard Paving.—Except in very smoky towns where nothing will grow, it is sufficient to provide at the back of the house a tar paved space 6 feet or 8 feet wide, leaving the remainder for garden purposes. In rural districts gravel may be substituted for the tar paving, but it cannot be kept so clean.

Drains.—It is not desirable to suggest saving in drains, as almost any departure from the usual by-laws will be false economy. It is not easy to ensure that drains laid in the most careful manner will stand, four or five years after being laid, the severe tests that may be put upon them by the Local Authorities in case of illness, and the whole may have to be relaid.

Fences.—Walls between yards and gardens are costly and unsightly. Having no lateral support they require concrete under quite as much as any other walls, but they do not always get it. It is quite a common thing, especially in London suburbs, to see the garden walls leaning. Copings, whether of brick or stone, are constantly becoming loose. A light wrought-iron unclimbable fence is about the same cost as a brick wall with coping or railing, and it possesses the advantage of throwing open gardens to sun and air and to general view. If greater privacy is desired, privet hedges can be planted close to the fence. Probably the cheapest form of fence is one of square wood posts at intervals of about 6 feet, the ends coated to prevent decay, and fixed in the ground. The intervening spaces are filled with pales about 3 inches by 1 inch, stopping short above the ground with open spaces about an inch wide between. Horizontal triangular pieces are fixed between the posts, and the pales are nailed to these. The whole can be wrought and painted, or left from the saw and coated with suitable composition.

Internal Wall and Ceiling Finishings.—If cheapness is desired, there is no need to plaster scullery and pantry walls. If pointed and whitewashed they will answer all purposes required, and at the same time there will not be the temptation to use the scullery as a living room. In plastered rooms wood angle beams are to be preferred to ordinary plaster unless the angles are bull nosed. It

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is quite easy for children to break off square plaster angles with the fingers. Cement angles are good, but expensive. Window reveals may, however, with advantage, be cemented, the cement projecting sufficiently to stop the ordinary wall plaster. This makes a good sound job, and prevents rain driving in behind the frames. The ordinary lath and plaster partitions and ceilings are still the cheapest, if they are not the best. Time, however, may be saved in the drying, and also greater strength obtained by the use of fibrous plaster slabs nailed to the studs or joists with large galvanised nails, and when the price of laths is high there is little difference in cost between this and the ordinary method.

Internal Fittings.—It is not usually practicable to allow more than £5 to £8 to be spent on the whole of the fireplaces in a cottage, and a good proportion of this sum is spent on the living room range. Whether this is a close range as preferred in the south, or an open Yorkshire range common in the greater part of the North of England, must be a matter of taste. The former has the reputation of saving fuel, and the latter is more cheerful to look at. A fairly good range can be obtained for about £2. For the parlour, brick surrounds with thick mortar joints and no mantel shelf are often given in "garden villages" whether the tenants like them or not; and while it is not desirable to permit them to select the gorgeous enamelled slate mantels, a simple, well-designed cast-iron mantel looks as well as anything, and is inexpensive. For bedrooms it will be found that a small mantel sham front, without a register which closes and prevents ventilation, the fire made up with firebricks will be cheaper than anything else.

The question of a bath is a very important one, and every cottage, however small, should have one. It is, in the smallest cottages, quite out of the question to provide a separate bathroom with a circulating system to supply hot water. In the larger types of cottages it can be done, but as the cost is anything from £15 to £30 some other arrangement must be adopted in the smaller.

It should also be remembered that in many districts, especially in the North of England, owing to the chemical composition of the water, copper must be used for boiler and cylinder, and copper or lead for the circulating pipes.

The cheapest substitute is undoubtedly to provide a bath in the scullery close to the washing pan, which may either be set in brickwork with an ordinary coal fire, or may be a galvanised pan heated by gas. It takes, of course, a long time to get a bath anything like full of the water heated in the pan, but people have to be content with a moderate supply of hot water, and it is a good deal better than having no bath at all. The bath should be provided with a hinged cover so that it may do duty as a table when not in use otherwise.

A better system than this is to provide one of the combination sets, of which there are several types, and which are admirably adapted for cottages when the bath is in the kitchen or scullery.

In order to reduce the cost of cottages or to improve their construction, various methods of wall construction are in use. Some of these are excellent, but although comparative prices per yard seem to show these to advantage, the experience of many architects is that unless used on a large scale, they are not so cheap as bricks and mortar.

Solid or Hollow Concrete Blocks.—These built up as walling stones and sometimes cast with a rough face to imitate them cannot be recommended from an æsthetic point of view. If smooth, or if covered with rough cast, there is not the same objection.

Solid Continuous Walling in Concrete.—This is filled in between movable boards and the face is afterwards covered with stucco. There are houses standing to-day which were built on this system over forty years ago.

Monolithic Concrete Walls.—These are built up by an ingenious method whereby hollow spaces are left in the centre of the wall, tending to keep the house warm and dry. The whole may afterwards be covered with smooth or rough cast stucco.

Solid Concrete Walls Reinforced.—These may be about 7 inches thick up the first floor and 5 inches thick above, but the trouble is that by-laws will not usually allow such thin walls whatever the construction may be. There are several patented systems on the lines above stated, and if covered with stucco they appear to be quite as good as brickwork, if not better, for there is a natural affinity between concrete and the stucco covering.

Concrete Roofs.—These are economically formed of concrete reinforced by one of the approved forms of bars. Unless, however, there is a ceiling under the concrete, the rooms immediately below are very susceptible to changes in the temperature. In cold weather the moisture in the house condenses on the under side of the concrete and distemper peels off. They are usually nearly flat, but a good method is to form them in a segmental shape with a channel and moulding projecting over the wall faces. It is quite easy to form them in this way, and also at the same time to form dormer tops and sides, the whole becoming a monolithic structure without the necessity of lead gutters. It is safer to use asphalt to cover these, or, at any rate, one of the systems of rendering concrete waterproof.

It is quite possible that, used on a large scale, some of the above methods may be more economical than the old; but a comparison of tenders actually received tends to show that for a small number of houses at least, the ordinary methods to which workmen are accustomed are still the cheapest.

There are several makes of artificial slates on the market, and it is usual to lay these so as to overlap the next course of slates below, instead of as in ordinary slating where they overlap the next but one below. It is, however, stated that the form in which they are laid renders this unnecessary in the artificial slates. Whether they are as waterproof as the ordinary slates can only be tested by experience, and it must also remain a matter of opinion whether they look as well.

Internal Partitions.—Fibrous plaster slabs from 1½ inches to 3 inches thick are made by many manufacturers and act as partitions between rooms. They are considerably cheaper than brickwork and may be reinforced so as to attain great strength. It should, however, be remembered that an ordinary stud partition is not only the cheapest form of partition, but that the studs may be fixed to roof and floor timbers in such a way that additional strength and rigidity are obtained, and they are easily made self-supporting. If plaster slabs are made to rest upon the joists these will have to be increased in strength, otherwise they will yield to the pressure, the ceilings below will crack and the slabs will show every joint. Properly reinforced, they may, however, be made quite self-supporting, and they have the advantage of not being easily damaged and of not harbouring vermin.

There are also one or two systems in which light brick, reinforced by bars, are built up in partitions. These give a good key for plastering and are quite efficient.

In addition to the new methods of construction above indicated, there are many others of an excellent character, some of which are not adapted to cottages, in which every shilling spent requires consideration, but to houses of a more expensive class.

It is not intended that the foregoing remarks should apply to blocks of flats, where other forms of construction may be applicable. They are limited to self-contained cottages in suburban or semi-suburban districts, and especially in industrial communities. Normal and not war conditions are also assumed.

The suggestions do not profess to be exhaustive, and there is no doubt that any architect with experience in this class of work will be able to suggest others. There is, however, even with the most lenient by-laws, a limit of cheapness which cannot be passed.

Other methods of solving the problem of housing the working-classes must be in some direction outside the scope of these notes.

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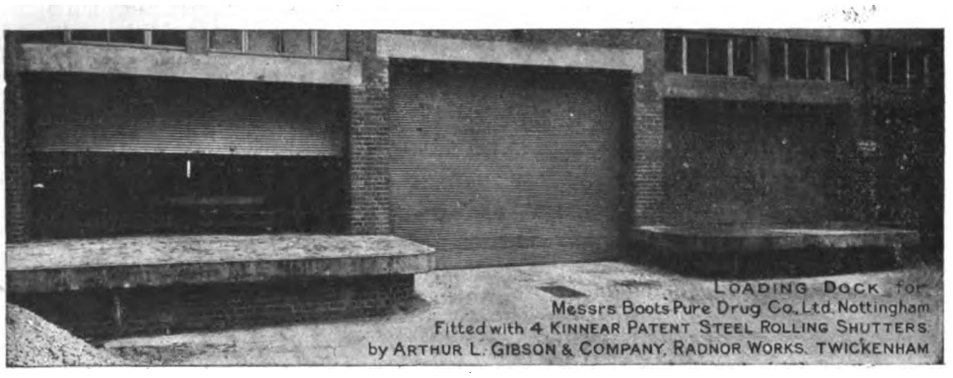
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Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Railway Goods Handling.

SIR,—There can be no doubt in the mind of any person qualified to form an opinion that the country stands in need of radical improvement in railway goods handling and its distribution in large towns.

Mr. Gattie, the well-known expert, claims that, by his scheme and machinery, this function in all large centres can be carried out in 1 per cent. of the time, on 1 per cent. of the space, and with a fraction of the rolling-stock and labour now employed in doing the work.

Mr. Gattie has demonstrated the soundness and value of his machinery to a number of leading engineers, who have reported on it in the highest terms, but generally railway officials have maintained silence except for a certain amount of vague criticism of an anonymous character in the Railway Press.

Speaking as a member of the body responsible for the upkeep of our highways, I am entitled to point out that, owing to railway terminal delay, in very many cases goods can be carried more cheaply and more quickly by motor lorry than by rail, even for long distances such as from London to Nottingham. Consequently a great deal of heavy traffic is thrust upon the road which should be, and could be, with great advantage carried on the rail.

The efficiency of the locomotive, as an instrument of haulage, is shown by Mr. Gattie to be more than a hundred times as great as that of a motor lorry, and the fact that the motor lorry can, and does, successfully compete with the locomotive proves what a heavy handicap terminal inefficiency must be to the locomotive.

But the evils of railway terminal inefficiency do not stop at the great disadvantage inflicted on the country in the matter of slow and expensive goods transport inland.

Railway terminal inefficiency congests our docks, and causes undue detention of ships, and thus creates a shortage of ships, and a cutting down of imports, which is disastrously affecting many industries.

In the face of the above circumstances, it seems very regrettable that the railways do not officially make a visit to Mr. Gattie's works and investigate a scheme the advantages of which are so palpable to anyone who has read the reports on it by Mr. James Swinburne, M.I.C.E., F.R.S., &c., or by Dr. Hele-Shaw, M.I.C.E., F.R.S., &c., and numerous other experts of high standing. These advantages are not limited to the public, but extend to the railways, the earning capacity of which will be manifolded.

It is not disputed that our inland freight rates in this country are the highest in the world, although our geographical position (as an island, non-mountainous, with ample supplies of coal and iron, and with centres of industry all close together and none far from our coast) should insure the utmost facility of transport, and therefore the cheapest rather than the dearest freight rates.

That this is so is obvious, and it would be of great interest to the country to have a report from the Board of Trade as to the nature of the influences which have so counteracted our natural advantages.

It would also be of value to have an official report from the Board of Trade on Mr. Gattie's scheme and machinery, which it is difficult to believe would materially differ from those of Mr. James Swinburne and Dr. Hele-Shaw. With such a report before him, the overwhelming importance of reform in this matter would be self-evident to any Minister of the Crown.

The whole country is alive to the fact that whilst we did not enter the war to maintain our commercial supremacy, it has developed as such; and the country will not be slow to recognise that we cannot enter the war after the war with the heavy incubus of the highest freight rates in the world strangling our industries and ruining our agriculture as it has done for the past forty years.

There is no time to lose in bringing about this reform of railways. There can be no advantage in delay, and there will be very great disadvantage. Such a reform must take some time to carry out, and the sooner we begin, the sooner we can finish.

Now is the time; let us begin at once, because much preparation is needed, and the matter is of vital importance. This country can never feed itself until its transport arrangements are put in order, and until it can and does feed itself, there is always the danger of starvation confronting us. Do not let us close our eyes to this great danger. Do not let us be too late in this matter, because it will mean downfall of the Empire if we are.—I am, yours, &c.,

ARTHUR E. COLLINS, M.Inst.C.E.,
Past President Institution Municipal and County Engineers; City Engineer, Norwich.

Norwich: April 11, 1916.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

DORSET.

Dorchester.—The "Phœnix," High East Street: alterations to stables, &c., for Messrs. John Groves & Sons (of Weymouth).

Stables, Princes Street: proposed alterations. Mr. F. T. Maltby, architect, South Street.

ESSEX.

Walthamstow.—The "Woodman" Inn, Higham Street: re-building for Mr. E. E. Harsent.

HAMPSHIRE.

Andover.—Four houses, Cross Lanes. Messrs. F. Beale and Sons, builders, Adelaide Road.

KENT.

Folkestone.—No. 86 Shorncliffe Road: additions for Mr. F. Nichols.

The Central Picture-theatre, George Lane: proposed additions.

LANCASHIRE.

Bacup.—Shop premises, Market Street: extension for Mr. J. R. Taylor.

Burnley.—"Woodfield House": alterations (£1,750) for the Town Council.

LINCOLNSHIRE.

Lincoln.—St. Peter-in-Eastgate Church: alteration.

Power Station: extension for Messrs. Ruston, Proctor & Co., Ltd.

NORTHUMBERLAND.

Catton.—House and shop, Allen View, for Mr. G. Newman.

Walisend.—Bakery, Back Laurel Street, for Mr. R. D. Blackburn.

NOTTINGHAMSHIRE.

Sutton-in-Ashfield.—House, stables, and piggeries, Deepdale Gardens, for Mr. M. Norwood.

Stables, Charnwood Street, for Messrs. F. & B. Wass.

SUSSEX.

Bexhill.—Two cottages, Cooden Sea Road, for Miss Kershaw.

House, Terminus Avenue, for Mr. H. Farnfield.

House, Cooden Drive, for Mr. P. Escreet.

House, Westcliff Drive, for Rev. Mr. Browell.

"Deema," Sea Road: additions for Mrs. Williams.

Hastings.—The "Palacette," Pelham Place: portion to be reconverted into dwelling-house. Mr. H. W. Coussens, A.R.I.B.A., architect, 5 Cambridge Road.

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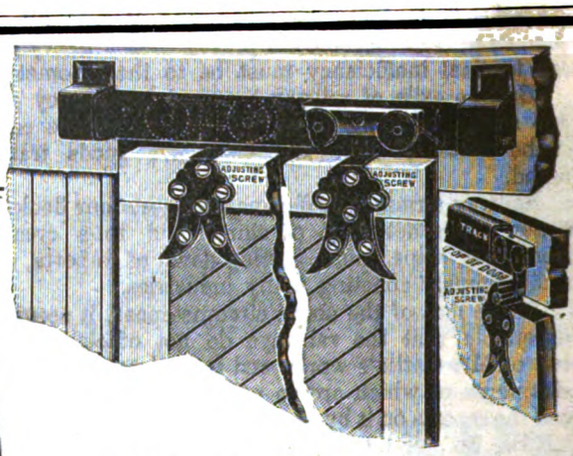
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ENGLAND.—*Continued.*

WARWICKSHIRE.

Coventry.—Bakery and stables, George Street, for Mr. J. Nicks.

Factory, rear of Far Gosford Street, for Pistons, Ltd.

Radford Works, Daimler Road: sanitary block for the Daimler Company, Ltd.

YORKSHIRE.

Holmfirth.—Proposed two houses, Bottons, for Messrs. T. & J. Tinker.

Thongsbridge Mills: addition.

Holme Valley Theatre: addition.

Sheffield.—Warehouse, Millhouses, for Sheffield and Ecclesall Co-operative Society.

Wakefield.—House, Woodthorpe Lane, for Mr. F. Harrup.

York.—Proposed Carnegie Public Library.

WALES.

Deganwy.—Bungalow, Cannock Park, for Miss Crossfield.

Villa, Bangor Road, for Mr. J. Jones.

SCOTLAND.

Aberdeen.—The Soldiers' and Sailors' Home, College Street. Mr. J. Rust, architect, 224 Union Street.

Ayr.—Buildings, Newton Esplanade: additions for Messrs. D. Wyllie & Co.

Edinburgh.—The Caledonian Station Hotel: alterations and extensions.

Nos. 85 and 91, Leith Street: alterations and extensions.

Forfar.—Lilybank Farm: proposed improvements. Messrs. Gavin & Soutar, architects. 42 East High Street.

Greenock.—Cinema, West Blackhall Street, for the North of Scotland Kinematograph Co.

Irvine.—Proposed picture-house and music-hall (£4,000), for the Scottish Kinemas, Ltd.

Turriff.—Johnston & Paterson's Mart: additions. Mr. W. L. Duncan, architect, Hallhill.

IRELAND.

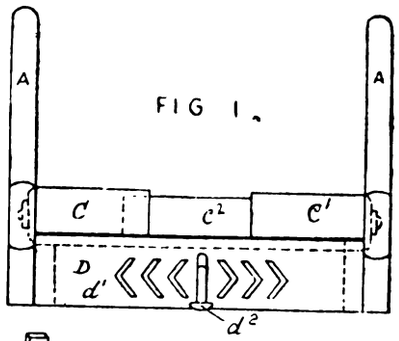
Blackrock (Co. Dublin).—"Dunardagh": addition. Mr. R. M. Butler, F.R.I.B.A., architect, 13 Kildare Street, Dublin. Mr. Michael O'Brien, contractor, 15 Summerhill, Kingstown.

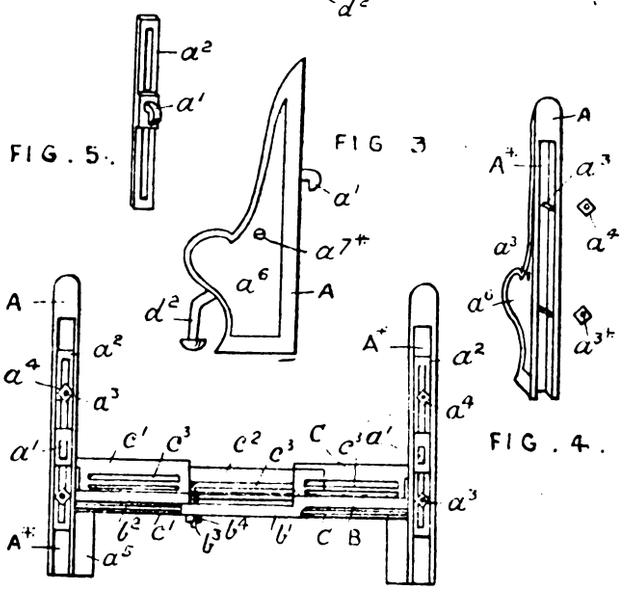
BRITISH PATENT SPECIFICATION.

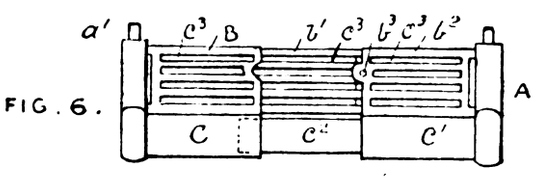
Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

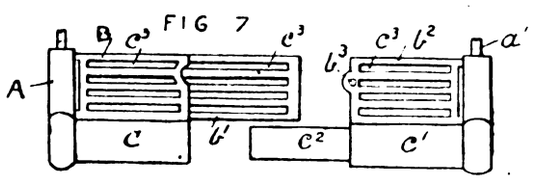
The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 9,536. June 30, 1915.—Bar-less fire grate. J. A. Frost, ironfounder, of Star Foundry, Langley Mill, Derby. —Fig. 1 is a front view in elevation of the bar-less fire grate with ventilating front ash guard. Fig. 2 is a back view in elevation of fig. 1 minus the ash guard. Fig. 3 is a side view of fig. 1. Figs. 4 and 5 are details of Fig. 2. Figs. 6 and 7 are views in plan of fig. 1. This invention comprises, amongst other things, two hollow or box-shaped standards or "fire-dogs" A. These "fire-dogs" have open channelled rear parts A^*, for containing the usual connecting hooks a^1. The slotted plate a^2, figs. 2 and 5, has "cast-in" screws a^3 and screwed nuts a^4, for fixing, regulating, and adjusting the hooks a^1 contained in the plates a^2 to any height required. The two overlapping, fixable, and adjustable fire grids B, b^1 and b^2, figs. 2, 6, and 7, having frontal telescopically interfitting, tubular or roll-edges C, c^1, c^2, are fixable to and inside of the hollow standards A. The said parts are fixed together by means of screws and nuts and adapt the grids and standards for being fixed at any required distances apart. A frontal cover plate D, fig. 1, containing perforations d^1, acts as a ventilator for regulating the supply of air to the underside of the fire and as a screen to hide from view the ashes, d^2 is a combined bracket support and handle for the plate D. The side parts a^5, fig. 2, are flanges or stops behind the plate D. This grate is designed for fixing to the rear and outer framing of an ordinary grate. The two-part grid, B, b^1, shown in figs. 2, 6, and 7, is cast in one piece with the tubular roll-edge C, and the small grid, b^2, is cast in one piece with the two-part tubular roll-edge c^1 c^2. The grid part b^1 is below the level of those marked B and b^2, so that in adjusting this bar-less fire grate to any required width the part b^2 can be made to slide over b^1 and rest upon it. A "cast-in" screw,









b^3, figs. 2, 6, and 7, passes through one of the open meshes in the part b^1 and a screwed nut b^4, fig. 2, serves to fix these grid parts immovably together in any required position and at any width required. The portion c^2 of the two-part roll edge c^1 can be made to telescope into the portion C in the adjustment of the grids. March 22, 1916.

MR. F. P. DELAMORE, deputy to the late Mr. F. W. Lacey, has been appointed borough engineer and surveyor of Bournemouth *pro tem.*

SIR THOMAS GRAHAM JACKSON, Bart, R.A., has removed from his chambers, Buckingham Street, Strand, W.C., the lease having expired. Letters, &c., may be addressed to him at Eagle House, Wimbledon.

THE Glasgow Corporation has decided to purchase for £5,000 the St. Rollox Mills in Garngad Road, of which the area extends to 13,159 square yards, as a suitable site for dwelling-houses for the poorest classes, under the Glasgow Improvement Acts. In lieu of a cash payment of the price either a Corporation mortgage or a temporary loan receipt bearing interest at the rate of 5 per cent. per annum is to be granted to the seller, to be repaid not earlier than twelve months after the termination of the war.

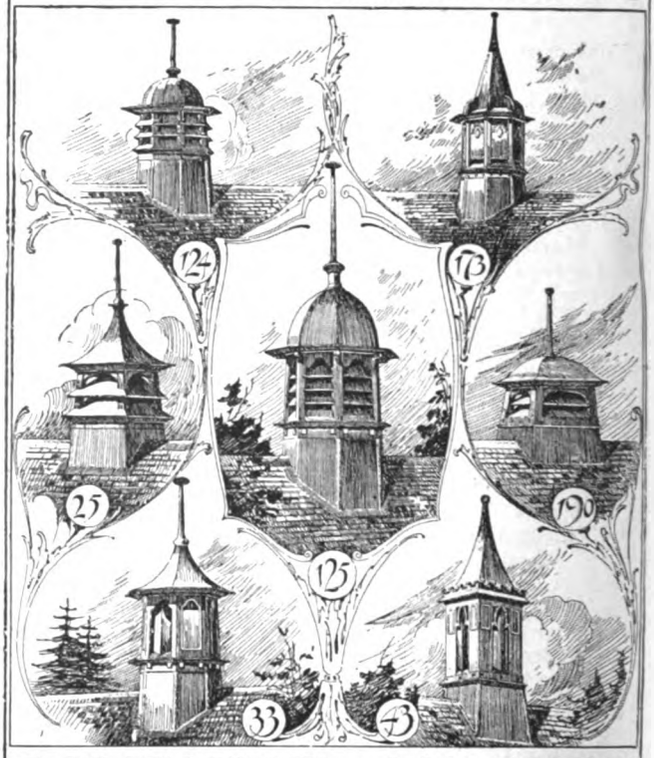
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WALL FLOOR FIREPLACE TILING & FAIENCE
THE CHARACTERISTICS OF THE PRODUCTS OF
NEW MARSDEN TILES, LTD. ARE
SOUND MATERIAL AND ORIGINAL DESIGN AT COMPETITIVE PRICES
BURSLEM · STOKE-ON-TRENT · ENGLAND



Kershaw, Brassington & Co.
(ARNOLD W. KERSHAW & CO.)
LANCASTER & SETTLE
Ventilator and Chimney Pot Makers, Sanitary Specialists.
Contractors to H.M. Office of Works and Admiralty.
Prices and Particulars on application.

MACKAY'S PATENT VENTILATORS



COUSLAND & MACKAY,
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Sole Manufacturers—COUSLAND & MACKAY.
WRITE FOR SECTIONAL CATALOGUES—No. 70 & No. 80.

CALLENDER'S
"Bitubond"
Building
Composition
SETS LIKE ROCK.

BONDS WALLS WITHOUT TIES
AND
OBVIATES CAVITY WALLS.
ABSOLUTELY IMPERVIOUS TO MOISTURE,
AND HAS ENORMOUS
CRUSHING AND TENSILE STRENGTH.

ASK FOR A. B. BOOKLET.
GEORGE M. CALLENDER & CO., Ltd.
Contractors to H.M. Admiralty, War Office, Office of Works, &c.
25 Victoria Street, LONDON, S.W.
(2)



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THE ARCHITECT

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FORTHCOMING EVENTS.

Saturday, April 29.

Edinburgh Architectural Association: Visit to Bruntisfield House and the Grange House.

Monday, May 1.

Royal Institute of British Architects: Eighty-second Annual General Meeting, at 4.30 P.M

Wednesday, May 3.

Institute of Sanitary Engineers: Meeting at Caxton Hall, Westminster, S.W., at 7 P.M.

Royal Archæological Institute: Paper entitled "Evidences for the Theory of a Variable Standard of Measure, relative to Fixed Standards, as applied to Ancient Buildings by Conventional Systems of Geometry," by Mr. F. Bligh Bond, F.R.I.B.A., at Society of Antiquaries, Burlington House, W., at 4.30 P.M.

Tuesday, May 9.

Illuminating Engineering Society: Discussion on a Report by the Research Committee of the Society, at the Royal Society of Arts, Adelphi, W.C., at 5 P.M.

ADVERTISEMENTS AND CIVIC AESTHETICS.

AMONGST the problems that confront the town-planner who makes it his aim not merely to make his model city more convenient and more healthy, but to increase its beauty, the treatment of the public street advertisement is not an easy one. The primary essential of an advertisement is self-assertion. It must at all cost call attention to the announcement it has to make. To do so it must arrest the regard of the passenger, so that he may not be an unheeding passer-by.

The most obvious arrest of attention is by the unexpected or the unusual. An effective advertisement must stand out from its surroundings by some striking difference from its neighbours. It may shout, scream, or hit the passer-by in the eye by unusual size, eccentricity of form or colour, blatant vulgarity. But such action is not really the most successful, for an advertisement is only likely to attain its object by inducing a favourable and friendly regard, and no one likes to be shouted or screamed at, or to be hit in the eye, so that such attempts to attract attention involve a feeling of resentment—sub-conscious, even if not expressed—that to a greater or lesser extent defeats the object of the offending poster or sign.

So great, however, is the temptation to adopt the bullying and blustering type of advertisement that throughout the civilised world measures have been taken to resist such adoption, and in the fourth edition of his book* on "The Improvement of Towns and Cities," Mr. Robinson records some of the steps that have been pursued, both in Europe and America, with that intention. In our own country we have had the excellent work of "Scapa," the British Society for Checking the Abuses of Public Advertising, which, amongst its objects, "aims at promoting a regard for dignity and propriety of aspect in towns." In the prosecution of this work it takes the ground that the instinct to be appealed to is that "of patriotic regard for the aspect of our country," not the desire of individuals to be protected from what they resent as mere personal annoyance.

A thoroughly sound principle was advocated in the suggestions for the regulation of advertising made by the Society for Checking the Abuses of Public Advertising to the London County Council in 1899, that a limit of height should be fixed above which there should be no letters or trade emblems, and that this limit should be thirty feet. Also, that space occupied by lettering should have a prescribed ratio to the superficies of the façade below the thirty-feet line. This is a recommendation that would be in the interest of advertisers as well as of æsthetics. The crowding together of advertisements on a building or hoarding diminishes their individual effectiveness.

Sky-signs, we are glad to realise, are now, both in London and Edinburgh, a thing of the past, and the equally objectionable flash-sign at night the lighting restrictions of war-time have relegated to an obscurity which, we may hope, will be permanent.

Greater power still is, however, required in all cities and towns, as in Edinburgh, giving their local governing authority the right to say where advertisements may be placed, and hence to prevent their erection where they could injure the attractiveness and the æsthetics of the city. We should like to see the character as well as the locale of advertisements similarly restricted, and this, again, we hold, would be in the interest of advertisers as well as of æsthetics.

An advertisement which stands out from its surroundings by superior beauty imparts pleasure to the beholder, and promotes a favourable association of idea between the advertiser and the public far superior in effectiveness to the knock-me-down outrage upon our susceptibilities. The action of the great national society, L'Oeuvre Nationale Belge, in this connection has furnished an example which is worthy of extended adoption. The subject of one of its earliest crusades was the character of the advertising signs on the streets, and it strove energetically to combat "the widely current but false idea that art is incompatible with economy and the necessities of trade."

It may be urged that of late years there has been a considerable improvement in the æsthetic character of posters and pictorial advertisements. But whilst this must be admitted, the admission does not lessen the necessity for restriction upon the blatantly vulgar and ugly advertisement. Indeed, the more widely spread becomes the use of artistic advertisements, the greater the temptation to enforce attention by resort to announcements of an opposite character, which shall stand out in a prominence, salient by its offensiveness. Power is undoubtedly required by which some competent authority may prevent the desecrating of good streets or buildings by ugly signs.

The control of advertisements on the public way is no visionary or impractical conception, and any city or village with ideals of beauty can find plenty of examples of how to go to work. And they can even put something into their coffers by going to work. In France for many years the law has imposed a fee for all painted signs in public places, and the person wishing to put up such a sign has, in his request for the permission, to make a declaration giving full intelligence regarding it, including even the text of the sign. In Rome the Municipal

* "The Improvement of Towns and Cities; or, the Practical Basis of Civic Aesthetics. By Charles Mulford Robinson, M.A., author of "Modern Civic Art," "The Width and Arrangement of Streets," "The Call of the City," &c. Fourth, revised, edition. (New York and London: G. P. Putnam's Sons. 6s. net.)

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Government Acts are posted on marble tablets owned by the Government and reserved for this use. Private announcements are on boards, of regulated size and form, which can be erected only on permission from the property-owner and from the city.

In London hoardings are subjected to taxes, like other rentable property, but their æsthetic regulation is still to seek. In police-ridden Germany it goes as a matter of course that street advertisements are subject to special regulations, and in Berlin monopolies of space are granted to the highest bidder. The little Dutch city of Leyden goes still further. Here the municipality itself manages the public advertising, and provides boards of neat and attractive design for public notices.

The poster we have recognised has much improved in artistic character during recent years, but there is no reason why art in posters, here to-day and gone to-morrow, should not be supplemented in more permanent advertisements. In the cities of Renaissance Italy the grey wall of many an old palace was brightened by its owner's escutcheon. Heraldry plays still, to a limited extent, a decorative part in modern streets, where the arms of royalty blaze in heavy gilt over the shops that have catered for the sovereign. We ought to find a suggestion here. There may be scant regard for heraldic crests and coat-mail telling of gentle descent, but why should not the trade-mark be made artistic, be coloured, and emblazoned on walls as proudly, in an age of commerce and industry, as were prowess and birth in chivalric days?

So with the work of the artists and craftsmen, with rebus signs and heraldic devices giving to advertisements a beauty long unknown, no longer restricted to meaningless painted lines. There need be nothing violently assertive, nothing glaring, but art might stud with beauty, life, and interest the background of harmonious façades and enhance rather than destroy the beauty of the architecture. We should find the proper solution of the advertisement problem not a discouraging task, but an inspiring opportunity, and the goal of the city beautiful would be reached with mutual advantage to both advertisers and æsthetics.

In his paper on "The Principles and Position of Town Planning," recently read before the Surveyors' Institution, Mr. W. R. Davidge, F.S.I., thus spoke of the control of advertisement hoardings, &c.: "The control of street advertisements and hoardings comes within the powers given under the Town Planning Act, and here, too, public opinion is coming round to the view that advertisements need not necessarily be ugly. They very often are, it is true; but this is more often due to want of thought than deliberate intention to offend. Too often the landscape along our railway routes and main roads is stamped for ever in our memories with "Potts' Pink Pills," or "Biles' Bilious Beans," writ large in the foreground. Such monstrosities ought for ever to consign these goods to perdition; but short of this, all such advertisements should be subject to annual licence by the local authority, and a good stiff licence fee per square foot."

NOTES AND COMMENTS.

THE Civic Arts Association, in pursuance of its endeavours to improve the artistic character of war memorials, is arranging a series of Competitions and Exhibitions, to bring before the public a variety of suggestions. The first Exhibition, to be held in the Common Room of the Royal Institute of British Architects, 9 Conduit Street, in July 1916, will be devoted to the designs and models submitted in the competitions of which particulars are given below. Large sums of money are being, and will be, expended on memorials, both monumental and of a kind suitable for the homes of the people, and the Civic Arts Association hopes by this means to bring those who are contemplating erecting memorials into touch with artists and craftsmen. The war has weighed heavily on artists and craftsmen, and the inevitable call for memorials will afford a reasonable demand for their services.

Prizes amounting to £205 have been offered by generous donors for certain types of memorials; also £25 has been placed at the disposal of the jury for award to designs, other than those gaining first and second prizes, which show special merit in any class. The classes for the competitions will include: (1) Monument for the new County Hall, London, first prize £50, second prize £15; (2) wall tablet in cast or chased bronze, £20 and £5; (3) wall tablet in carved wood, £20 and £5; (4) wall tablet in stone or marble, £20 and £5; (5) a simple wall tablet in wood, £10 and £5; (6) mural painting for a boys' club, £10 and £5; (7) a fountain, £20 and £5; (8) inexpensive memorials for "The Home," £5 first, £3 second, £2 third prize.

There is a great need for a class of memorial which will be within reach of those who have very small incomes; at this Exhibition it is hoped to put before the public designs and suggestions of this kind, such as frames for Rolls of Honour and photographs, caskets for mementoes, or stands for holding medals, &c. The conditions governing the competitions and other necessary details will be sent to intending competitors who forward to the Secretary of the Association at 28 Prince's Gardens, S.W., a postal order for 1*s.* and a stamped and addressed foolscap envelope. The postal order will be returned on receipt of a bona fide design.

A quite wise appreciation of Mr. Gilbert Scott's design as so far revealed in the construction of Liverpool Cathedral appeared in the "Times" on Good Friday, in which the author rightly says: "Of the three new cathedrals that have been built in England since St. Paul's, Truro is a frank imitation or strict exercise in Gothic styles; and, with such dignity as it can, marks the fortunate close of the Imitation Gothic period. Westminster Cathedral, although original and in a very considerable degree successful, is an exotic. Its style is based on nothing English, and will hardly influence English architecture. In Liverpool alone there seems to be a second blooming or ghostly revisitation of the true Gothic spirit; not a thing of great reality, or that can in any sense be regarded as an expression of anything belonging to its own day; but still a thing of beauty and dignity. An anachronism, necessarily, in a day when a genuine temple or tabernacle for the spirit of the age might take the form of a huge cinematograph theatre."

In discussing the powers sought by the South-Eastern and London, Chatham and Dover Railway Company to strengthen the iron bridge at Charing Cross by building steel lattice arches with stone piers under one-half its width, Mr. H. J. Leaning in the "Journal" of the London Society rightly urges that "two things stand out very clearly as indisputable from the point of view of the aims and objects of this Society"—and we may add from that of all lovers of the beauty of London's river. The first is that nothing should be done to lengthen the life of the iron bridge; and the second is that the needs and hopes of the last three-quarters of a century for a road bridge at Charing Cross should not be sacrificed or endangered by the private interests of a railway company.

The cathedral at Andria, near Bari, Italy, which was built in the twelfth and thirteenth centuries, but possessed a still older campanile, has been almost completely destroyed by a fire which spread as far as the Bishop's palace. Andria is a city of some 50,000 inhabitants, founded in the middle of the eleventh century, and was once the favourite residence of the Emperor Frederick II. In the cathedral were buried his second and third wives, Iolanthe of Jerusalem and Isabella of England, the latter of whom died at Foggia in 1241. The old church of Sant' Agostino, during the sway of the Hohenstaufen in Andria, became the property of the Teutonic Order.

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The famous collection of paintings by Dante Gabriel Rossetti, purchased by the late Mr. George Rae, who was a personal friend of Rossetti, and housed at Red Court, Claughton, has been offered to the nation by the trustees. The collection consists of ten oil paintings and ten water-colours and drawings, nearly all painted in Rossetti's finest period, from 1857 to 1866, and include such masterpieces as "The Beloved" (oil), "Monna Vanna" (oil), and "The Blue Closet" (water-colour), of which Maeterlinck said that since seeing it many years ago he was haunted by it.

The representatives of the Rae family are anxious that the collection should be kept together if possible, and that it should be acquired for the nation, preferably for the Tate Gallery, and they are prepared in that case to make some concession as to price.

The collection was roughly valued at £15,000 by the Rae trustees, and many judges do not consider that estimate excessive; but Mr. Robert Ross, late Assessor of Picture Valuations to the Board of Inland Revenue, puts a war-time valuation of £9,695 on them, eleven of the finest pictures accounting for £7,550 of this total. It is understood that Mr. Edward Rae has agreed to accept these valuations, certainly in regard to the first eleven essential pictures, and probably in regard to the whole collection.

In the new municipal buildings at Coventry the following scheme for stained glass windows in the Council Chamber has been adopted:—Centre Window.—Panel figure of Godiva as a Saxon Countess, with Arms of the Benedictine Priory underneath. Window on Left.—Panel figure of Edward III., with Arms. Window on Right.—Panel figure of Henry VI., with Arms. The Arms include those of:—The early Saxon Kings, Kingdom of Mercia, John Talbot, 1st Earl of Shrewsbury; Lord William Zouch, John Ward, Everton or Everdon, Sir Thomas Lyttleton, Sir Humphrey Stafford, 1st Duke of Buckingham (1459); Only or Onley, William Ford, Sir William Hollys or Holles, John Dudley, Duke of Northumberland; Humphrey Burton, John Marston, Elizabeth of Bohemia, Sir Edward Coke, Norton, Lord Brook, of Warwick Castle; the Earls of Denbigh, Samuel Baker, Bridgeman, James Hewitt, 1st Viscount Lifford; the Cravens of Coombe, Sir Skears Rew, Robert de Limesay, Roger de Montalt or Mohaut.

On Dunagoil, at the south-west corner of Bute, excavations of what may prove one of the most important pre-historic stations in Britain and one free from Roman influence have revealed remains of daub-and-wattle huts, various stone structures, and a primitive bloomery or iron manufacturing chamber, with its associated utensils, lumps of charcoal and the scoriæ of bog iron ore. Crucibles with bronze slag adhering, and baked clay moulds employed to cast objects of bronze, including a highly ornate socketed ferrule for the end of a spear-shaft, further testify to the nature of the metallurgical operations carried on within the citadel. Of baked clay there are beads, balls, cores, and several little non-crucible cups. The domestic pots were chiefly large, flat-based, bucket-shaped vessels of kiln-fired clay, though ladles of soapstone were also employed. Of stone implements there are anvils, pounders, hammers (some of them perforated), smoothers, grinders, polishers, rubbers, and whetstones, made from porphyry, slate, hæmatite, quartz, quartzite, and other rocks. Whorls of lignite, sandstone, marble, slate, and steatite show that the women were active in spinning. The recovery of their awls, needles, hair-pins, dress-fasteners, tweezers, brooches, finger-rings, and some four dozens of bracelets, chiefly fragmentary, indicate that women were not conspicuous by their absence. Within the fort was carried on the manufacture out of lignite of large, flat rings like quoits, of unknown use, and of ornaments such as rings and bracelets. Articles of soapstone, such as cups, rings, and whorls, were also made on the spot. Valuable from the chronological and artistic points of view are decorative objects of glass, the colours used being yellow, mottled red, deep blue, white, and sea-green; a metal brooch of safety-pin type; and several large ring-headed pins of iron and bronze of corrugated surface, with shanks intentionally bent to facilitate their catch in the clothing or coil of hair. Of the numerous bone objects there are chisels, awls, pins, mallet-heads, and several mysterious and carefully made discs cut out of flat pieces of shoulder bones or skulls, and a whistle with quaint design of dots, circles, and arcs incised upon it. The iron objects consist of spear and hatchet heads, staples, rings, chisels, and awls.

The Council of the Institution of Civil Engineers have made the following awards for Papers read and discussed during the Session 1915-1916:—A Telford Gold Medal to Sir John Benton, K.C.I.E. (Eastbourne); a Watt Gold Medal to Sir George Buchanan, C.I.E. (Rangoon); a George Stephenson Gold Medal to Mr. F. W. Carter, M.A. (Rugby); and Telford Premiums to Mr. C. Carkeet James (London), Mr. D. E. Lloyd-Davies (Cape Town), and Mr. W. T. Lucy (Oxford).

At the Second Annual General Meeting of the Town Planning Institute, to be held at 92 Victoria Street, S.W. (by kind permission of the Institution of Municipal and County Engineers), this afternoon, the following gentlemen, who at present comprise the Council, will be nominated for re-election:—Members (Architects): S. D. Adshead, P. B. Houfton, H. V. Lanchester, A. S. Soutar, P. T. Runton, R. Unwin (President). Engineers: J. A. Brodie, J. W. Cockrill (Senior Vice-President), W. T. Lancashire, H. E. Stilgoe, J. A. Webb (Assoc. Member), E. Willis (Assoc. Member). Surveyors: T. Adams, W. R. Davidge, T. H. Mawson, G. L. Pepler, G. N. Dixon (Assoc. Member). Legal Members:—E. R. Abbott (Vice-President), J. T. Birkett, R. A. Reay-Nadin. Legal Associate Member:—C. P. Lovelock. Hon. Member:—W. R. Jeffreys. Associate Member:—Sir R. A. Paget, Bart. Ex-Officio Member:—P. Abercrombie (Hon. Librarian). The Council suggest that, having regard to the present crisis in the affairs of the nation, and to the fact that many members are on active service or working at great extra pressure, and on the ground of economy, it will be advisable that no further nominations should be made this year, so that a contested election may be avoided.

The British Fire Prevention Committee have issued one of their Red Books in respect to the Paris Bon Marché fire of November last. The report is illustrated and indicates the vast extent of this extraordinary fire in a building that covered no less than some 50,000 square feet, and had an Auxiliary Military Hospital on its fifth floor. The estimated damage was no less than £560,000, but fortunately no lives were lost owing to the precautionary measures taken to obtain ready means of exit from the hospital referred to. It is pointed out that extensive fires of this kind have been largely avoided in this Metropolis by the fire preventive measures embodied in the London Building Acts, and other enactments, and put in force by the District Surveyors, the London County Council, and the Fire Inspection Department of the London Fire Brigade. The manner in which the great Paris Bon Marché fire was handled by the Paris Fire Brigade is made the subject of a favourable comment in its report.

THE Victoria and Albert Museum collections include a number of notable Shakespeariana acquired in past years largely under the Dyce, Forster, and Charles Kean bequests. In connection with the tercentenary commemoration it was decided to arrange these (which are not ordinarily shown to the public) as a special temporary exhibition. The exhibition has been arranged in the Book Production Gallery on the first floor (Room 74; access by the north-west staircase); it will continue until further notice.

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ILLUSTRATIONS.

LYCH GATE, ST. NINIANS, TROON.—LECTERN, AYR.

THESE examples of the ecclesiastical work of the recently elected Associate of the Royal Scottish Academy, Mr. James A. Morris, F.R.I.B.A., were shown in last year's exhibition of that institution.

THE INSTITUTE OF CHEMISTRY.

THE Institute of Chemistry, founded in 1877, incorporated by Royal Charter in 1885, and for more than twenty years established at No. 30 Bloomsbury Square, has erected for itself a new building at the corner of Russell Square and Keppel Street, W.C., where adequate accommodation is provided for its many activities. The Institute is not only the official centre of the English chemistry world, but is also an examining body, its certificates being recognised as the hall-mark of competence in chemistry.

The new building, of which Sir John Burnet is the architect, presents a simple and dignified exterior, the main doorway, with its seated figure of Priestley (the work of Mr. Gilbert Bayes), being practically the sole decorative feature. It is essentially the house of a professional institution.

The walls of the building are of Fletton bricks, faced on the Russell Square and Keppel Street frontages with Crowborough bricks. The main cornice and other stone dressings are of Portland stone, the round-headed windows of the council-room and library being relieved with carving. The internal partitions are of light concrete construction, and the floors are finished with pitch-pine, quarter-cut and laid in narrow widths.

LINEN PANELS FROM THE "GRAND CERF," GRAND ANDELY.

THESE varied forms of linen panels are reproduced from sketches made in 1881 at the well-known "Grand Cerf" Inn at Grand Andely (Eure), (once a house of Pierre Harley, Archevêque de Rouen, temp. Henri Quatre). Many of them are very suggestive. The mullion given is in the "Tambour," an interesting drum-shaped serving lobby to the "Salle à Manger."

E. SWINFEN HARRIS.

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—XVII.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

IT must be admitted without question that the architectural style of St. Mark's, Venice, in its original conception was foreign to Italian character and ideals.

In its inception and execution, however, is mirrored the life and associations of the ancient Venetians, and with its surroundings it marks that period of history when Venice held great power and position, and flourished exceedingly. The site occupied by this famous pile, it is said, was the site, or nearly so, of the original church which existed prior to the ninth century, this earlier church being dedicated to St. Theodore.

The body of St. Mark, or what remained of it, was, it is said, brought to Venice by Venetian merchants from Alexandria, where, in 829, it is recorded, it was preserved. St. Mark then became the tutelary saint of the Republic in the place of St. Theodore, who had previously been the patron saint.

The church of St. Mark, the commencement of the construction of which dates from 829 or 830, was originally a simple basilica, without transepts, ending in the usual apse, and was erected under Giovanni Participazio. In 976 the church was damaged by fire and was restored by Pietro Orseolo.

The middle of the eleventh century witnessed the reconstruction, in the time of Doge Domenico Contarini, of this church in the Byzantine style, and the work of rebuilding and decoration proceeded for a space of about 200 years.

The Oriental magnificence of the lavish and costly decoration is the great attraction in this wonderful edifice. The gorgeous effect of St. Mark's, produced by the profuse employment of rich, rare, and most costly marbles and other stones, and of mosaics, the like of which are not to be seen elsewhere, is enhanced by the wonderful lighting effects. Disregarding the various Gothic and other additions, there still remains one of the finest Byzantine fabrics in existence.

The addition of Gothic ornaments in the early part of the fifteenth century, and the further addition of parts in the Renaissance style in the following century, combined to produce a marvellous and unique composition which, notwithstanding the mixture, is still essentially Byzantine-Romanesque. During the period of the greatest prosperity of Venice the church of St. Mark was merely the private chapel attached to the Ducal Palace. The church of San Pietro di Castello was the cathedral church until 1807, after which date St. Mark's became the cathedral church of the city. It is some-



THE CORTE OF THE PALAZZO DUCALE, SHOWING THE SCALA DEI GIGANTI, AND (ON THE LEFT) THE TORRICELLA, AND THE MOST EASTERN DOME OF ST. MARK.

times stated that the design came originally from Constantinople, and again that it was the work of a Greek artist; but this church is certainly the largest Italian sacred edifice in the Byzantine style. The ground plan is that of a Greek cross, all the equal arms are vaulted semicylindrically, terminating, after meeting in the centre of the building, in four semi-circular arches on the four sides of the central square.

The lighting is introduced through windows arranged in a cylindrical wall which rises from the circular base formed by the pendentives which are gathered over from the anterior angles of the main piers. From this same cylindrical wall springs the hemispherical dome. Semi-circular arches spring from rows of columns which

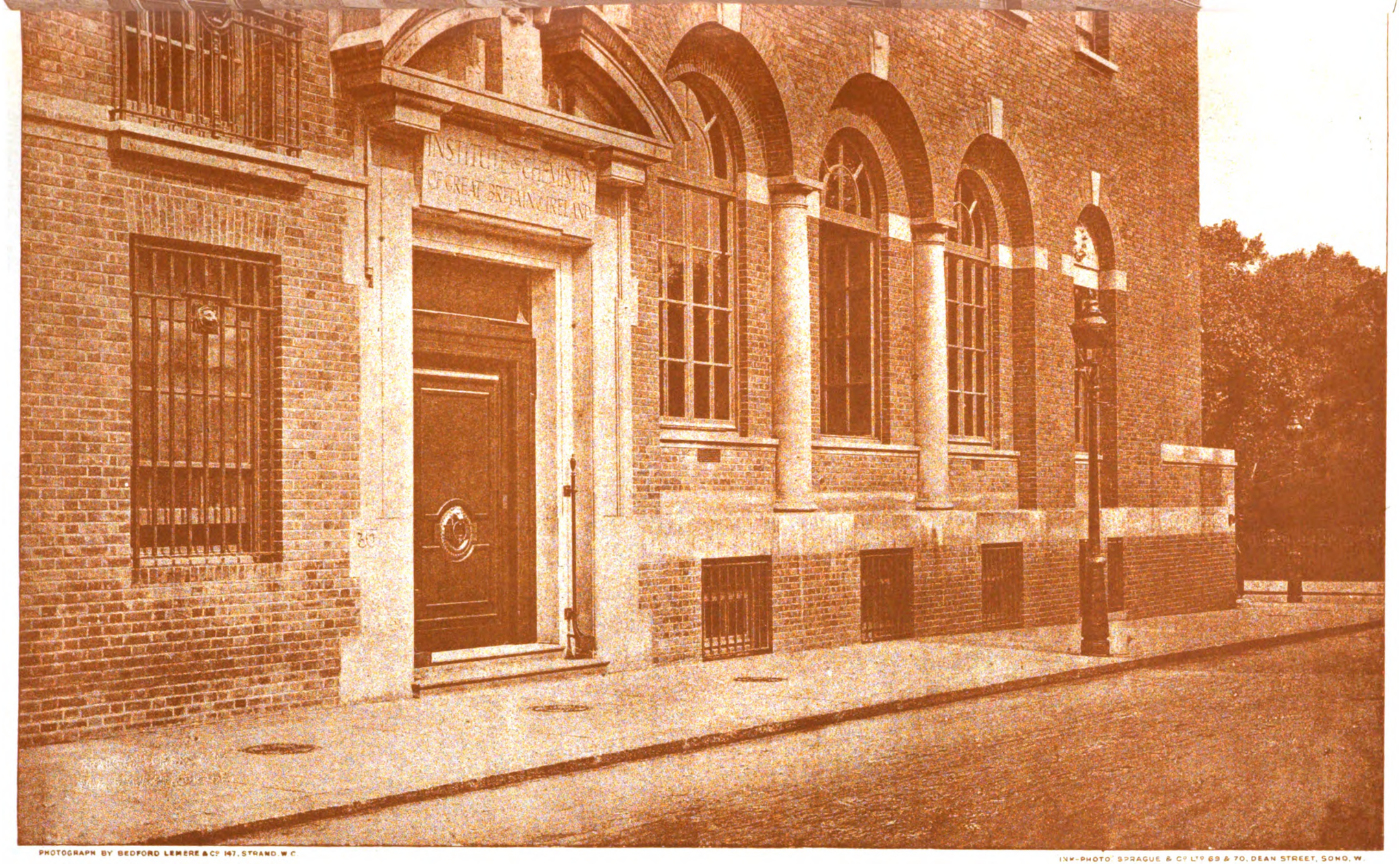
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INSTITUTE OF CHEMISTRY, RUSSELL SQUARE.

Sir J. J. BURNET, R.S.A., Vice President, R.I.B.A., Architect.

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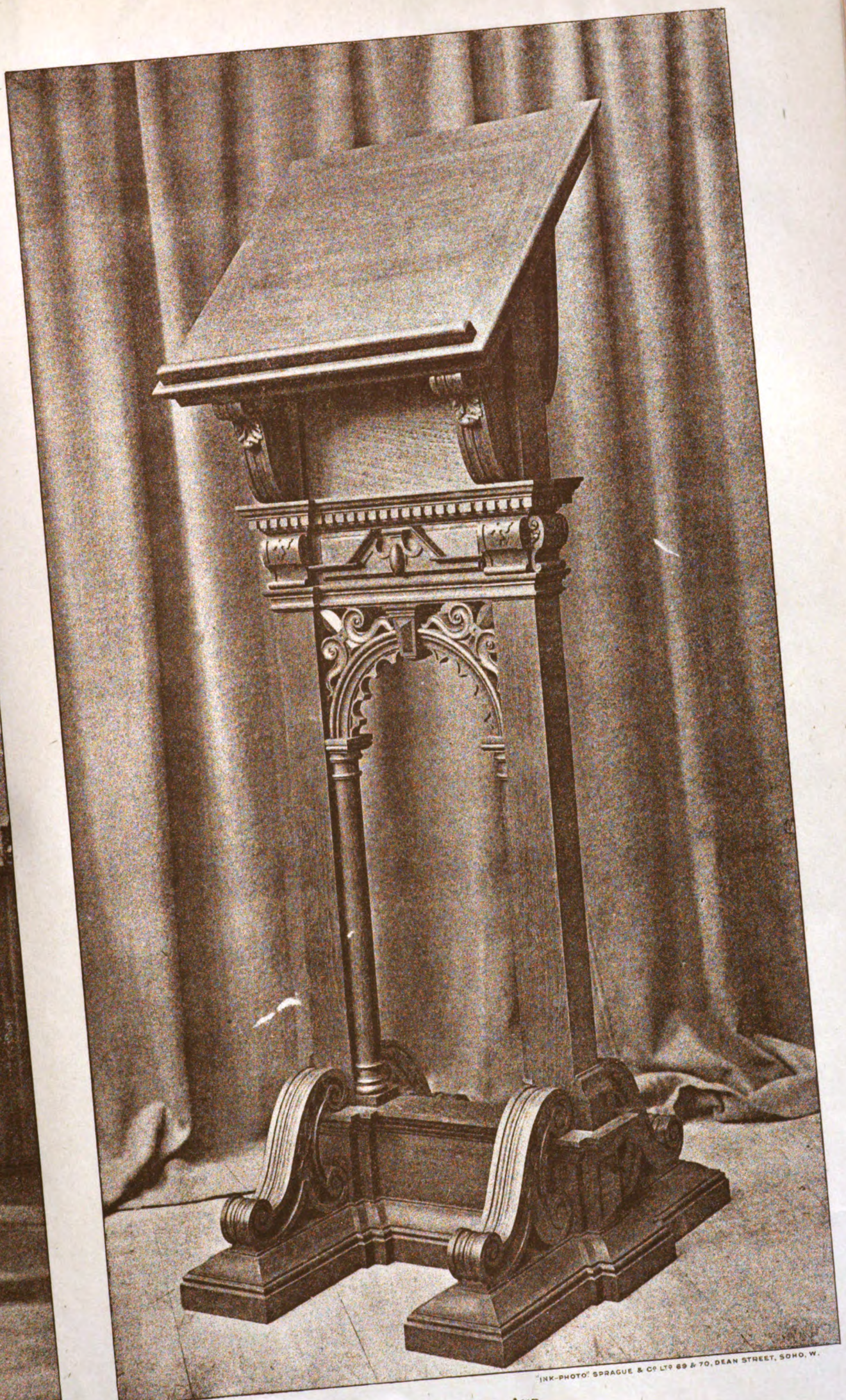
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LYCH GATE, ST. NINIANS, TROON.

(Royal Scottish Academy, 1915.)

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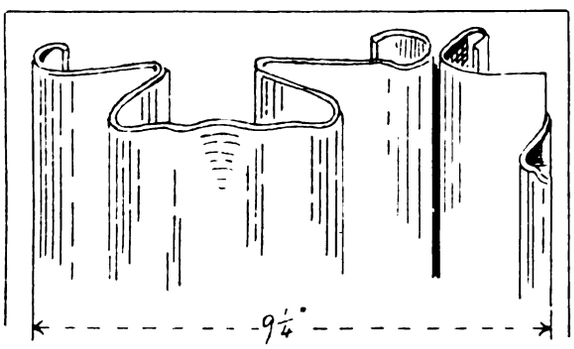
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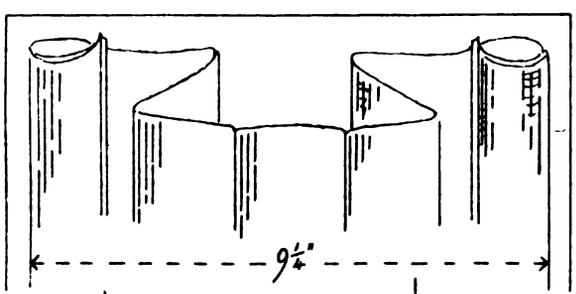
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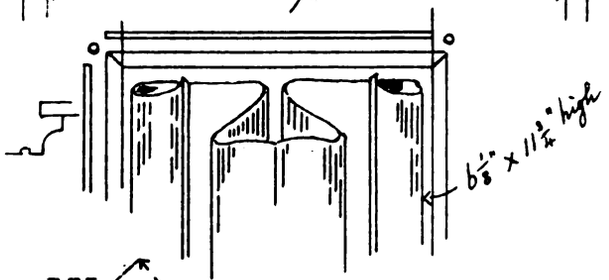
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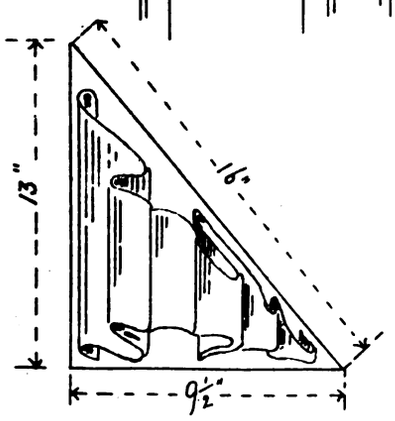
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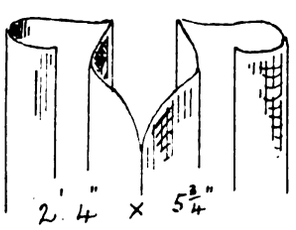
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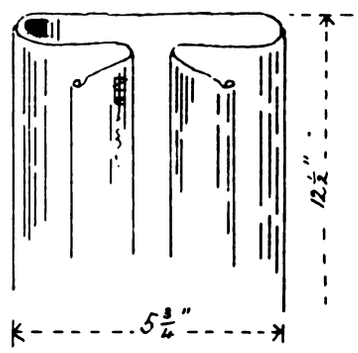


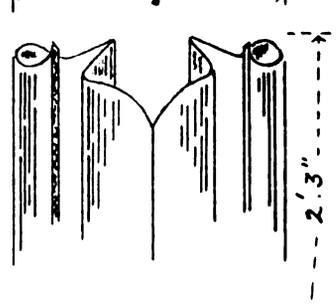


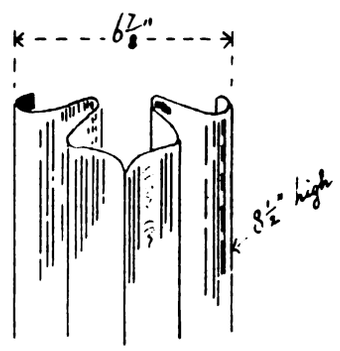


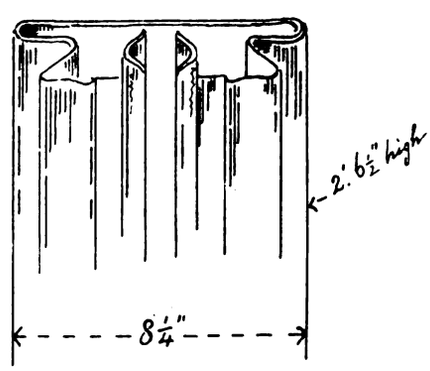






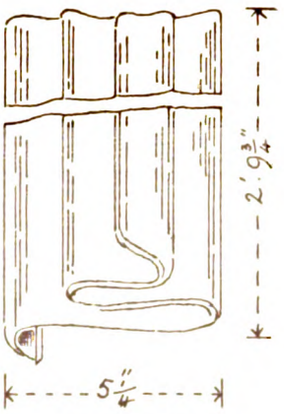


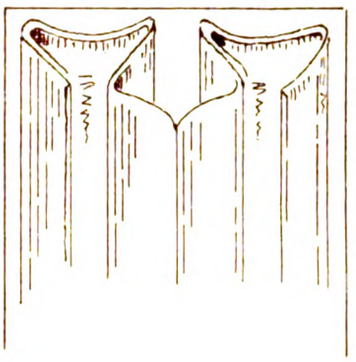




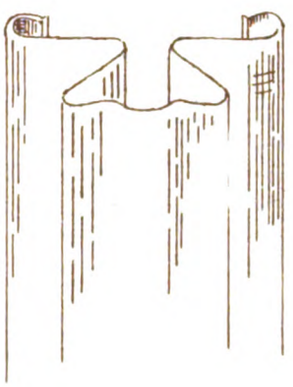
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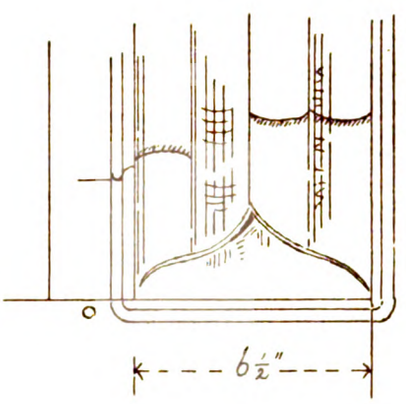
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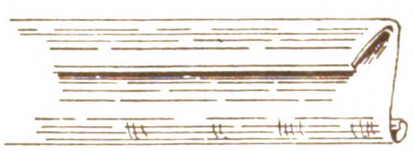
Panels in Outer Door
of the Salle à Manger
2'. 4½" x 6½"



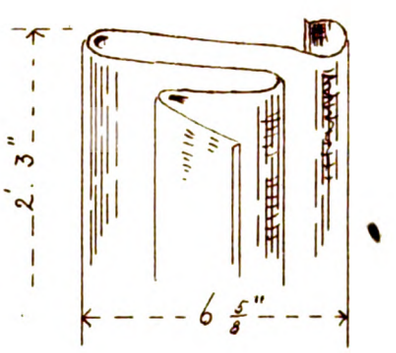




Circular Wood
Mullions in the Round
Door in the Salle à Manger



Oblong Panel
1'. 10" X 2½"



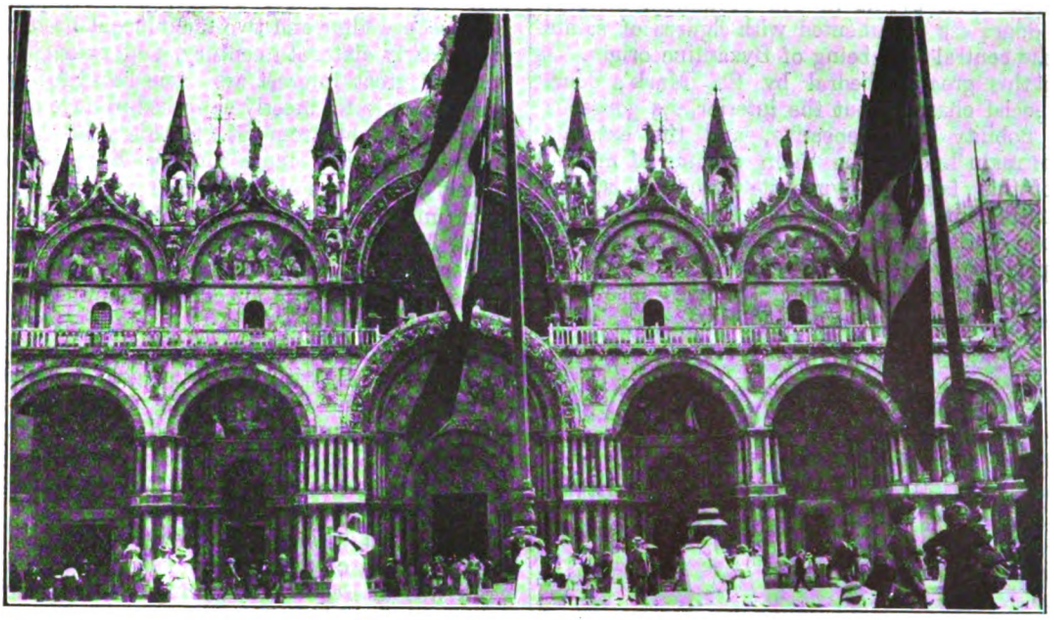
E. Stirling Harris: F.R.I.B.A.
mens. May 1881.
del. Jan. 1916.

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ST. MARK, VENICE.

separate the building transversely and longitudinally. There are, in addition to the principal domes, four others, one over each of the four arms of the cross. The atrium is covered by a series of small flat domes. This edifice is so huge and in composition so varied and perplexing that, to fully study its various parts, many visits and lengthy visits are necessary.

Its length is 250 feet and its width 170 feet. The shell is of brick, faced with thin layers of marble of great variety, and other stones as beforementioned, largely obtained from earlier buildings. The vestibule or atrium surrounds the foremost arm of the plan. Like Milan Cathedral, the vastness of this church is such that it is impossible to grasp at first sight its full beauties. Its character is so devious and intermixed, and its ornamentation and detail so complex, that days of study are called for if its full Oriental grandeur is to be fully appreciated.

In the many visits that are necessary it is advisable that such visits should be interspersed with visits to other notable buildings, if one desires to escape that confusing effect caused by the strange and crowded features of this great church.

The wonderful charm of the exterior of St. Mark's lies not in the rows of sculptured marble saints, or in lofty campanili, towers, or pinnacles, nor indeed in its many domes, but in the complexity of its many coloured marbles and in the wonderful mosaic pictures on lustrous gold groundwork. There are three façades to this church, the western façade flanking the fine piazza, the southern facing the lagoons and the piazzetta, and the northern façade facing the Piazzetta dei Leoni. The atrium, as mentioned before, surrounds the lower portions of the façade on the north and west, and on the south the baptistery and the Cappella Zeno are formed by this enclosure. Over the principal portal, upon the roof of the atrium, stand four horses in bronze, some five feet high, said to be classed amongst the finest of ancient bronzes. It is said that these bronzes once adorned the triumphal arch of Nero, and later of Trajan; also that Constantine caused them to be sent to adorn the imperial hippodrome at Constantinople, and that they were brought to Venice as spoils of war by Doge Enrico Dandolo in 1204. Further, that in 1797 Napoleon carried them to Paris; but in 1815 Emperor Francis of Austria caused them to be restored to their former position. Above the roof of the atrium are three great arches belonging to the original Byzantine erection. Standing in the piazza a fine view, very imperfectly depicted in the photographs reproduced, is obtained of the west façade and the five great domes.

The fine mosaics on the façade are worthy of careful examination and reveal much of the early history of the church. They depict the embarkation of the body of St. Mark at Alexandria, its arrival at Venice, the veneration of the Saint, and the deposition of the relics of the Saint in the church of St. Mark. This latter mosaic is of the thirteenth century, and shows the façade of that date, without its Gothic ornamentation or additions. There are other mosaics of the seventeenth century above; but these and all the others, excepting the thirteenth-century composition just named, take the place, it is said, of earlier mosaics of much finer quality.

With the exception of the fifteenth-century Gothic additions, the principal façade stands to-day as shown in the thirteenth-century mosaic, the original Byzantine-Romanesque structure, excepting so far as the mosaics already named have been altered. The south façade, seen from the piazzetta, gives a good view of the detail of construction of this Byzantine style. The upper portion of this façade has very fine ornamentation, perhaps the best in the whole fabric. The very magnificent pierced screen in the two large arches, and the famous mosaic of the Madonna in the smaller central arch, are of great beauty. Here are again additions in the Gothic style in the shape of gables and canopied pinnacles.

The remaining (the north) façade, of which a view is obtained in the Piazzetta dei Leoni, is again of considerable interest and worthy of study. Additions in the Gothic style have been made also to this façade. Late Romanesque carvings of prophets, angels, and saints adorn the vaulting of the portal, and the Byzantine influence is discernible in the carving above the door.

On entering the atrium by the main portal of the principal front, shown very clearly in one of the photographs reproduced (Article XVI.), one has an opportunity of studying the very beautiful early mosaic in the lunette over this entrance, a fine specimen of this wonderful work for which this church is so famed. This mosaic of Our Lord enthroned between Our Lady and St. Mark is perhaps one of the most ancient mosaics in this basilica.

Passing through this doorway (facing the door of St. Mark), a splendid opportunity presents itself for the examination of mosaics of surpassing beauty and amongst the earliest in the church. These Byzantine examples are of thirteenth-century date, and represent Old Testament subjects—"The Creation of the World," "The

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Fall of Man," "The Deluge," "Noah and the Tower of Babel," and other events in Old Testament history. The bronze doors are ornamented with figures of saints in enamel, the central door being of Byzantine origin.

Entering this great cathedral by St. Mark's door, there is a special charm about the interior, its gorgeous decorations, nobility of perspective, and the extreme beauty of its main lines. The main scheme of mosaic decoration of this famous Byzantine structure is, following a central line drawn through the inner church from the door of St. Mark to the apse at the east end, descriptive principally of the life of Christ, the story in mosaic decoration commencing at the apse and finishing near the main entrance.



THE CAMPO ST. MAURIZIO, VENICE, AND THE CAMPANILE OF THE CHURCH OF ST. MAURIZIO.

The most eastern dome over the Presbytery contains representations of Christ and the Prophets, the arch intervening between this dome and the adjoining one gives particulars of His Infancy and Ministry.

The Ascension is depicted in the great central dome, with Our Lady and the Twelve Apostles, and on the great arch between the two transepts, the Passion and Resurrection are depicted, other events in Gospel history being depicted upon the side arches. The Descent of the Holy Ghost is shown in the next dome to the west, and the Acts and Martyrdoms of the Apostles on either side in the aisles.

The Vision of the Apocalypse and the Last Judgment are depicted upon the last great arch.

Beginning at the door of St. Clement the right aisle ends in the apsidal chapel of St. Clement; and at the door of St. Peter, the left aisle ends in the apsidal chapel of St. Peter. These two entrance doors are on either side of the central or St. Mark's door.

The south or right transept is approached by a private door from the Ducal Palace, and contains an early-Renaissance altar and two magnificent bronze candelabra of the early sixteenth century, and amongst many other items of great interest are some beautiful specimens of church furniture, mostly supposed to have been the spoils of war brought from St. Sophia's at Constantinople, and, in addition, tenth-century Egyptian rock-crystal vessels and works in agate and turquoise. The high-altar (under the most eastern dome) containing the relics of St. Mark (which disappeared after the fire of 976 but were recovered in 1094) stands under a canopy of verde antico, supported by four carved columns of rich marble, magnificently executed.

The very beautiful Pala d'Oro (golden altar piece) of enamelled work, with jewels on gold and silver, is supposed to be the finest existing specimen of jewellers' work of the early-mediæval period, made at Constantinople in 1105.

The upper portion, it is stated by some authorities, was made in Constantinople in 976, and the lowest part in 1105, and it is further written that other portions formed spoils of war in the year 1204. This piece of work was altered and re-arranged in the thirteenth and fourteenth centuries.

Behind this high-altar is a second altar, with six fine columns, two of African marble, two partially transparent alabaster, spirally carved, and two verde-antico columns.

Two Romanesque pulpits stand by the screen, right and left on approaching the high-altar; these are of coloured marbles and supported on columns with



LOOKING ACROSS THE RIALTO, FROM THE LEFT BANK OF THE GRAND CANAL.

Byzantine-Venetian canopies. A screen composed partly of Oriental columns separates the Presbytery from the central area, and has upon it fourteen statues in marble of 1393 date by Giacomello and Pierpaolo delle Massegne, all very magnificent examples of Venetian sculpture.

Upon the arch over the rood-loft are mosaics from designs by Tintoretto. The north or left transept entered by the door of St. John has, in addition to a fine

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mosaic of the sixteenth century, a specially fine Romanesque altar by Lombardi or Rizzo, and two bronze candelabra by Camillo Alberti of sixteenth-century date. This transept also contains the Cappella dei Mascoli, a fifteenth-century structure, with fine mosaics, particularly those by Michele Giambono, begun in 1430, on the roof; very beautiful specimens of fifteenth-century work and indicating the transition from the early-Byzantine to the seventeenth-century styles. The Cappella di Sant' Isidoro is also contained in this transept, wherein rests the tomb of the saint, and more mosaics of quite different type to the other mosaics within this great church, as well as being not so pleasing or successful. The pavement of this building is of special character, being of mosaic composed of marbles and other precious stones.

In the right or south aisle close to the principal entrance are very fine early mosaics, and in the left or north aisle is a beautiful Byzantine representation of the beardless Christ, and other fine figures of four prophets.

Adjoining the south aisle is the Battistero (Baptistery), which, together with the Cappella Zeno, contains possibly more objects of artistic interest than many notable cathedrals. One may profitably spend half a day or more in this little area. This baptistery and chapel were originally part of the atrium, but were partitioned off in the thirteenth century, and in the middle of the fourteenth century the whole baptistery was decorated with mosaics at the order of Doge Andrea Dandolo. This baptistery consists of three portions, the first containing the large font of 1545 or 1546 date. The Renaissance bronze lid ornamented with reliefs by Tiziano Minio of Padua and Desiderio of Florence, carries a bronze statue of John the Baptist by Francesco Segala (1565) from a design by Sansovino. In the central dome or cupola is the figure of Christ commanding His disciples to "go into the world and preach, baptising, &c." Over the entrance to this compartment in front of the font is a perfect piece of mosaic composition, "Herodias' daughter dances before Herod," &c., a masterpiece of this class of work. Opposite the main entrance door is the monument to Doge Andrea Dandolo, a fine piece of sculpture of the fourteenth century, worthy of the great prince to whose generosity the execution of the magnificent mosaics in this little building was due. The second compartment of the baptistery contains the altar and fine mosaic decorations, both upon the lunettes and in the cupola. The former principally depict incidents from the life of John the Baptist, and the latter contains as the central feature, Christ in Glory ascending surrounded by Angels.

The third portion of the baptistery is a small vaulted chamber forming a kind of vestibule between the baptistery and the Cappella Zeno. There are here again fine mosaics depicting scenes from the life of Christ before His baptism. Passing into the Cappella Zeno, a beautiful little chapel which can be seen through the railing in the entrance vestibule or atrium, containing a number of interesting and exquisite items of decorative work, beautiful mosaic work and late Romanesque sculpture, there are early mosaic examples on the vaulted roof, including a beardless Christ and the legend of St. Mark, whose relics were first deposited in this little building after arrival at Venice. There are very many other items worthy of careful examination in this Cappella Zeno, and in the centre rises a magnificent monument to Cardinal Giambattista Zeno designed by Alessandro Lombardi and Camponato. The altar is a handsome piece of work in bronze and marble. The sacristy should be visited and contains fine mosaics in the Renaissance style by Titian and his pupils, and other very interesting and magnificent work, including intarsia work by famous masters. The treasury again contains much of great interest, and lastly, the crypt restored in 1901 is one of the most ancient parts of this amazing edifice. The crypt contains a wonderful collection of short columns of Greek marble, the capitals of which are of special interest.

(To be continued.)

HOUSING SCHEMES AFTER THE WAR.

At the National Congress held at Caxton Hall, London, under the auspices of the National Housing and Town Planning Council to consider home problems after the war, the following memorandum was submitted by the chairman, Councillor Harold Shawcross, J.P., on "The Preparation of Housing Schemes to be placed in operation at the close of the War."

The virtual stoppage of the building of working class houses since the outbreak of the war has raised the question of housing accommodation in an acute form, and the fact that this stoppage (so far as the building of houses by Local Authorities and public utility societies is concerned) has been in some measure due to refusal of the Government to lend money for this purpose, renders it imperative that we should consider this question not only on new lines, but as belonging to the group of problems arising out of the war, and involving expenditure of an uneconomic kind to secure results in the achievement of which the honour of the nation is vitally concerned.

The problem of how to provide a sufficient supply of workmen's dwellings in the future in view of the fact that for some years now the number of new houses built each year has been steadily declining resolves itself into two aspects, viz.:—

(1) The provision at the close of the war of houses in adequate numbers throughout the country in those places where the need for them is pressing and where there is unemployment in the building trade owing to men returning from the war being thrown upon the labour market.

(2) How to stimulate the supply of houses in the future seeing that private enterprise, which has provided the bulk of houses in the past, is failing to meet the present requirements.

The first part of the problem is discussed in this memorandum, whilst in another memorandum to be taken later the second part will be considered. In the second memorandum the causes of the shortage of houses will be dealt with at length.

It will be admitted without question that at the outbreak of the war there was a great shortage of houses over the country generally, and this shortage has, of course, been greatly intensified by the practical cessation of building since the war began.

It will also be admitted that the cost of building houses and the rents necessary to be charged for new houses have gone up enormously, and therefore it will be very difficult to get private enterprise to go on building houses at the close of the war when capital will be scarce, rates of interest high, and the cost of building possibly excessive.

Another reason why private enterprise will not be anxious to build houses at the close of the war is that the ordinary law of supply and demand, which in the end will govern the question of rent, is at present in abeyance. For supply and demand began to operate after the war started, by the raising of rents over the whole country, and more especially in those areas where the Government were starting munition works and where through the influx of population the shortage of houses was increased.

This forcing of rents has, however, caused so much opposition that the Government has been obliged to intervene by passing an Act to prevent the increasing of rents during the war period and for six months after. It has been impossible to avoid doing this as no building can be done at this time, and Local Authorities and public utility societies are forbidden to borrow for the purpose even if the cost of materials and the scarcity of labour did not make it prohibitive. The effect of the new Act will therefore be that the ordinary process of getting new houses built in a time of rising prices (by forcing up the rents of the existing ones until the building of new houses becomes an attractive proposition) will not come into play.

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We shall find at the end of the war that older houses will be let at very much less rents than new ones can be built to let at. The situation then so far as getting houses built in the usual way will therefore be a very difficult one, unless means are taken by the Government to stimulate the supply. It is also probable that so far as private enterprise is concerned the effect of the Increase of Rent and Mortgage Interest Act will be to discourage persons from lending money on mortgage on working class houses at as low a rate of interest (compared to other investments) as they have hitherto done, and builders will therefore have difficulty in getting advances on houses they propose to build. It will therefore be necessary, at any rate in the months directly succeeding the close of the war, to rely primarily on Local Authorities to fulfil the duty of remedying the shortage of houses in cases where other means fail.

Housing Action by Local Authorities.—It is essential that this housing action by Local Authorities at the close of the war shall be recognised by all classes of the community as part of a national duty. Unless is is so recognised it is to be feared that many Local Authorities will not have the foresight to tackle this problem whilst we are at war. They will have a valid excuse for inaction, for everywhere their staffs are depleted and in many cases their chief officers have been drafted off to do other work. But the chief reason is that many members of Local Authorities cannot bring their minds to bear upon problems which are not directly related to the task of winning the war.

It should therefore be made absolutely clear that the exercise of foresight and the preparation of housing schemes is a national duty, the performance of which is only second to that of winning the war. If this is recognised by Local Authorities no doubt need be felt as to the patriotic desire of municipal officers to take in hand the necessary work.

From this it would seem that we may divide the farming and agricultural classes into five groups:—(1) Those who work large acreages as capitalists, and who regard farming as a financial undertaking: an increasing class. (2) Those who, dependent on labour, farm areas that are insufficiently large to pay the cost of management: a class that is rapidly declining. (3) Those who work very small farms by their own personal effort: a class who work hard, have few outside interests and ambitions, and whose profits are sufficient to make ends meet. (4) The small holder who is entirely dependent on the fruits of his holding and who, by intensive culture, makes a satisfactory livelihood. (5) The small holder and the holder of an allotment whose agricultural pursuits are merely a means of amplifying an income derived from other occupations and other sources.

Transport and Marketing.—Good cultivation and improved methods in working the land are, however, of little avail without convenience of transit and facilities for conveying the produce to the best market. The informants of the Report of the Land Enquiry Committee say that the facilities available to farmers for the carriage of produce, manures and other requisites are insufficient. Further, in many parts of the country much fertile land which might be intensively cultivated produces little, owing to its distance from the station. Thus the President of one of the County Farmers' Unions says:—"Some of the most productive land for market gardens is some 10 to 15 miles from the nearest railway station, and hence ordinary farming is carried on. The great want is a system of light railways."

The Surveyors' Institution, after showing the advantages that would be derived were more use made of the existing waterways, were better use made of the railways, and were there constructed more light railways, adds: "Turning to less ambitious schemes, it is possible that in some districts small holders, and even large farmers, might combine successfully to provide motor transport." Generally the Report seems to advocate an extension of the light railway system, but in doing so it does not neglect to mention the advantages of the road motor.

The Light Railway Commissioners, in their Report of 1912, say:—"With regard to the great development in recent years in motor traction upon public roads, it is interesting to note that in our experience, confirmed by the two cases of proposed light railways which we have most recently had under consideration, the establishment of a service of motors (in each case combined with the organised co-operation of the agricultural and other local interests) had tended to stimulate the desire, and to emphasise the need, for better railway facilities, rather than (as is sometimes supposed would be the case) to supersede them, or to take their place. In these cases evidence was brought to show the considerable extent of saving to the road authorities in the annual cost of maintenance which would follow from a transference to a railway of the traffic otherwise carried on the public road; this point was also in accord with our previous experience as bearing on the economy of transport by railway." And it continues:—"In making these observations, we appreciate that, in districts where it is not practicable to construct a railway, and where the traffic is not sufficient to support one, a motor service (especially when combined with some co-operative system) may be of much use, and in many cases would develop the traffic to a point at which railway facilities would become requisite, and feasible, for the further progress of the district."

This was written some four years ago, since when transport by road has made extraordinary strides. As a plea for the light railway it is hesitating and inconclusive, and with the latest experience of the use that can be made of roads we must regard its recommendations as a little out of date, if not defunct.

It would appear, then, that without even considering the question of remodelling the condition of existing holdings great improvements would be effected in the agricultural and allied industries were the roads and road service increased and improved, were there in some places light railways constructed, were the existing competitive system of railway rating publicly controlled, and were greater use made of existing waterways for the carriage of indestructibles, such as building materials and manures.

Labour and Housing.—It would be superfluous to consider in detail the present condition of labour and housing in country districts, apart from the whole question of agricultural efficiency, except to point out that there can be no increase in the amount of labour that we put on the land unless the question of an increase in housing accommodation is dealt with at the same time. The present deficiency is too well known to need amplifying. It is not generally realised that except for a very few recently erected dwellings, to be seen at rare intervals, the whole of the rural cottages in England date from the first half of the nineteenth century or earlier; in other words, the development of the rural village has practically remained stagnant for nearly a century, the only new buildings being official buildings, post offices, general stores, police stations, and occasionally a public house and a school.

Little wonder, then, that the lack of housing accommodation and social attractions, together with the prospect of earning higher wages and an independence of personality but little understood in rural districts, should have driven many of the most enterprising of young country folk into the towns. Here, then, without enlarging upon the question of wages, education and social relation—all important factors to be recognised in any scheme for invigorating rural life—is presented a picture of the conditions of existence in the agricultural areas of England to-day. It now remains to outline improvements, which with State assistance and better organisation could be effected.

A Scheme of Reform.—Having made a brief survey, it would be well, before proceeding to outline reformatory measures, to consider, by an examination of tendencies, what would be the outcome were the nation as a whole to remain indifferent to progress and were the State not

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to intervene. Competitive interests between individuals would certainly become the most pronounced of evolutionary factors, and would result in the welfare of the people as a whole being sacrificed to the interests of the few. Doubtless the capitalist farmer would become increasingly important. Huge farms competing with one another in cheapness of production would, by sweated labour, and by working only the best and most easily worked land, soon oust out of existence the smaller men. Later, this would lead, on the one hand, to the strengthening of unions amongst the labourers, and on the other hand to the formation of combines between the masters, which with State protection—quite a conceivable contingency—would result in a great increase in the price of our most essential foods. Against such a monopolist system the small farmer would stand but a very poor chance; only the small holder with his intensive culture would survive.

The question before us, then, seems to be, are we to allow the national demand for cheap food, higher wages, and an increase in the population of our rural areas—a demand that is fundamental to the progress of a democratic community and which can only be satisfied by foresight in planning—to remain unsatisfied because the relative positions and responsibilities of the big farmer and the small holder are not to be inquired into and understood?

To prevent disaster, action should be taken without further delay. What is needed is State intervention on behalf of the small farmer, and discretionary powers as regards the working of big farms which will tend to discourage poor farming and encourage the farmer who farms well. The village as a social organisation will need to be reconstructed; education and educational systems in rural districts will have to be reformed, and co-operative systems established on a much wider basis.

If on the other hand unemployment does arise, the loss incurred will be small compared with the unproductive expenditure on a huge scale involved as a result of the adoption of hastily prepared schemes for relief, or the expenditure involved in keeping men in the Army in order to avoid the disorganisation of the industry of the country. It must, moreover, be clearly recognised by the Government that members of Local Authorities would prefer as business men not to carry housing schemes into effect until the rates of interest fall and the prices of building material become normal. To build in periods in which high rates of interest have to be paid and in which the cost of material is abnormal, must mean, unless special terms are given, that the rents charged for the houses when erected will during the whole period of the repayment of the loan—say sixty years—be abnormally high. It may be urged that it would be better to wait, therefore, until the rates of interest fall and the cost of building materials is decreased. But to follow such a course will be to shirk the performance of a national duty of primary importance. In the words of Mr. Rowntree: "Quite apart from the responsibility for minimising unemployment, which always rests upon the State, we owe a debt of honour to the soldiers and sailors who ungrudgingly left their homes and occupations at their country's call and risked everything for her. The least she can do is to provide them with an honourable means of subsistence on their return to civil life." Therefore even though it is uneconomic to build in a period of national disorganisation our sense of national duty should leave us no choice and compel us to keep faith with these men, even if some maxims of political economy are disregarded for a time and the rules of Treasury officials concerning housing schemes are treated as of secondary importance when a national duty has to be fulfilled.

Action by the Local Government Board.—It will be necessary to ask the Government to do more than deal with finance. The Local Government Board should be approached and urged to communicate with all Local Authorities in the kingdom asking them for a return of the number of working class houses empty in the district and whether new houses are required. Also the returns and reports of the medical officers of health of various districts should be asked for so as to show exactly how many houses need to be condemned as insanitary dwellings. For the number of new houses required will depend on how many should be replaced and the Local Authorities should be required to formulate definite proposals for dealing with their insanitary houses over a short number of years. If on receipt of these particulars there appears to be a shortage of houses in any district the Local Government Board should require that a scheme be prepared to remedy the deficiency—such scheme to be put into force at the conclusion of the war. If no land owned by the Local Authority is available or suitable for building purposes, then option should be obtained for the purchase of land—such option to be exercised at the close of the war. In purchasing land Local Authorities should not be tied down too much to the size of the area to be acquired, but rather be urged to buy ahead of their immediate requirements, especially when the price is reasonable. Land thus bought by the Local Authority should be available for use by public utility societies, co-operative societies, and possibly under certain definite conditions, by private builders.

It should be a "sine qua non" that all housing schemes should be carried out on town-planning lines with a limited number of houses to the acre. All plans both for laying out the proposed building areas and for the designs of the houses to be built should be decided upon now by the Local Authorities. If it is urged that there is no need to commence this work until a later period of the history of the war, it will be of service to point out that quite generally a year is taken for the preparation of a housing scheme, and sometimes a period of two years elapses between the passing by a Local Authority of their first Resolution and the actual letting of the tenders for the execution of the work.

The argument may be used that the designs of houses cannot be settled upon until the cost of building same is known. It cannot be too strongly urged upon Local Authorities that considerations as to the cost of the house should not be allowed to influence them in deciding upon the plans. The usual accommodation and size of rooms should on no account be interfered with—if any cutting down is required it should rather be in building more of the less expensive types—i.e. with only one living room instead of two, and in doing away with extras that add so much to the expense and which are often not necessary.

Unless schemes are ready to be put into operation immediately the necessity for them arises, much valuable time will be wasted. Unemployment might continue in a district for months whilst the Local Authority was considering how to deal with the problem and what plans to adopt. Such plans decided upon in haste and without due consideration being given to the sites and plans to be adopted will almost certainly result in failure and disappointment.

NOTTINGHAM AND DERBY ARCHITECTURAL SOCIETY.

The Fifty-third Annual Meeting was held on Tuesday, April 18. The chair was taken by the President, Mr. Harry Gill, M.S.A.

The Council reported that one member and one associate member had been elected; and to Valentin Vearwyck, a Belgian architect of note, at present residing in Nottingham, the privilege of honorary membership has been granted until peace is declared. The death of one member, the resignation of two honorary members, four members and the exclusion of one associate had left a total membership of 116, a decrease of eight.

A suitable greeting in the name of the Society had been sent at Christmas time to the twenty-six members serving their King and Country.

Although the profession had suffered more than any other in consequence of the war, no case of absolute

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distress had been brought before the Emergency Committee of the Society.

The Hon. Secretary had assisted the R.I.B.A. War Committee, but for some reason the results had not been commensurate with the time and trouble involved.

The Royal Institute now urge all architects suffering from the effects of the war to take up munition work, and several members have already qualified.

The members over military age were asked by the Local Parliamentary Recruiting Committee to canvass under Lord Derby's Scheme, and several members gladly gave their services.

No Summer excursion was held, but four visits to works proved interesting and instructive.

Four sessional meetings were held at which useful papers were read and discussed.

Notwithstanding the decreased membership, the funds of the Society showed a satisfactory balance, and it was unanimously decided to send a donation of three guineas to the Architects' Benevolent Fund, and invest £15 in the War Loan.

Mr. Spencer, the Hon. Librarian, reported that several members had generously contributed books to the Library, and Mr. Hendy, who was now on active service, had lent the whole of his books until the war was over.

A motion, "That the rules as to election of Officers be suspended and the present Officers continue until April 1917," was unanimously agreed to.

The President, Mr. Gill, thanked the members on behalf of himself, the Vice-President, Mr. H. G. Watkins, and the members and officials of the Council for the renewal of their confidence, and hoped that before their extended term of office was completed brighter times would have dawned for them all.

ARTISTS AND THE FINANCE (NEW DUTIES) BILL.

As the representations of artists against the inclusion of art exhibitions under the amusements tax made through the Imperial Arts League have been ignored by the Chancellor of the Exchequer, a protest urging the following points, and signed by a large number of artists and others connected with art exhibitions has been issued by the Imperial Arts League:—

It was intended—

(*a*) That educational work should be exempted from the incidence of the tax.

(*b*) That the educational value of art has been recognised by every civilised Government, including the British, by the establishment of State-supported art galleries, by grants in aid of the teaching of art, and by State aid given to various art exhibitions.

(*c*) That the duty falls more heavily on picture exhibitions than on any form of entertainment. The usual charge for admission to picture galleries is a shilling in London, while in the provinces it is often only sixpence, or even threepence. On the last-named amount the tax of over 33 per cent. is to be levied, on the other amounts nearly 17 per cent., whereas on a seven and sixpenny theatre ticket the duty is only a little over 6 per cent.

(*d*) We desire especially to point out that exhibitions promoted by societies of artists or municipal corporations are held on an entirely different basis from entertainments intended to be included under the entertainments duty. Apart from their educational value, exhibitions are essential to artists for the sale of their work, and differ fundamentally from entertainments. Whilst theatres, music halls, and cinema performances may be said to be earning larger profits from the present prosperity of the working classes, the exhibitions of societies we represent are merely channels for the sale of art productions; are unable to show any profit in normal times without the annual subscriptions of members, and are probably now keeping open at a loss. The surplus receipts, if any, are devoted to the purchase of pictures for the municipality in which the exhibitions are held, to the furtherance of art by educational and other means, or the assistance of needy artists.

(*e*) That these exhibitions are practically the sole outlet to the artist for the disposal of his work.

(*f*) That as every public art exhibition is being conducted at a loss at the present moment, the tax, instead of being paid out of profits, will have to be met by special levies either on municipal rates or on the individual members of artistic societies. How keenly art exhibitions are feeling the effects of the war already may be gauged by the admission receipts of the Walker Art Gallery, Liverpool, which averaged £3,000 annually during the thirty-three preceding years, but dropped to a little over £500 in 1914. This exhibition, the most important in the North of England, would have been given up had not a few patriotic citizens agreed to defray the expense. Many art society exhibitions are now largely supported by levies made on the members; an additional burden may probably bring about the collapse of a number of old-established institutions, and add greatly to the distress now so prevalent among artists.

(*g*) That the general decline in admissions shows that it would be folly to try to transfer the burden of the tax from the art societies to their visitors by raising the entrance fee.

(*h*) No class of the community has a larger proportion of its members on active service than artists, or has contributed more liberally to war charities, and none has been so severely affected by the incidence of the war. It seems, therefore, a gross injustice that this patriotic and unfortunate body should be weighed down by a tax which cannot be liquidated out of income, but falls on their generally meagre and fast-diminishing savings.

THE PRINCIPLES AND POSITION OF TOWN PLANNING.*

By W. R. DAVIDGE, F.S.I.

(*Continued from p.* 293.)

The Causes of Development. Influence of Geographical Position.—There is a reason for most things, and not least, for the position of towns where they exist. In most cases the community has grown up either because of some natural advantage—the possession of a coal mine, or a well, or a spring, or a ford across a river, or a hill for defensive purposes, or because of its position at a road, junction, or along some important line of route.

The commercial success of the town is no less dependent upon a continuation of these conditions. The weekly market perhaps attracts business; the opening of a factory or a new industry brings an influx of people, but the causes which operate to bring about this prosperity are deep set in the natural, geographical, and strategical position of the town.

Private residents will not be attracted to a town which is a blot on the landscape, and businesses will not come unless there is business to be done. Any town plan, therefore, for the development of a town must aim first at making the utmost of all such natural and geographical advantages, and then at guiding the development into the most advantageous line for the benefit of the town and its residents.

Transit Facilities.—The provision of efficient and up-to-date means of transit is one of the most important items in the development of towns; yet strange as it may appear, this all essential detail is omitted from the calculations of many would-be town-planners.

On more than one occasion during my recent visit to the Colonies I was asked to advise as to the lay-out of estates or townships many miles away from any existing community, with no special *raison d'être* of their own, and which under hardly any circumstances could become self-supporting and self-contained. It is evident that

* Abstract of Paper read before the Surveyors' Institution.

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in the absence of any special commercial or natural advantages, or of facilities for easy communication with existing centres, a community cannot expect development.

It must not be thought from this that any new "garden cities" cannot be created, but they can only be successfully created if they can secure enough commerce or industry to make them self-supporting, or if they are linked up to existing communities by easy and rapid transit of some description, so that the new community can serve either as a branch industry or as a health resort or dormitory to one or more existing towns. Rapid transit, therefore, is all important to the success of any town.

In America, where distances are so immense, the transit question inevitably bulks largely, but especially in recent years American towns have given more and more attention to the problem of the quick distribution of passengers from the outlying districts to and from the central or business portions of a town.

"Rapid transit" is therefore one of the first considerations of our American cousins in considering the problem of town development, and it is indeed strange that we in this country are only dimly beginning to realise this in our struggles after new and improved arterial roads. Main roads and motor traffic are, however, only one part of the problem, and, in America, many experts are giving their attention to the solution of the transit problem as a whole.

Rapid Transit.—One of the most useful investigations in this direction, and one which has been of great service as an example to other towns, was that made by the Philadelphia Transit Commissioner in 1913, and his report gives a most exhaustive and comprehensive survey of the transit problem, so far as Philadelphia is concerned.

Special study has been given to the transit question in the United States generally, and especially of its effect on town development.

It is naturally found that property in the neighbourhood of a "rapid transit line" develops more rapidly than other parts of the town, and if only one such line exists, it will naturally absorb the greater part of the normal growth of the town.

The question of the amount of traffic to justify the construction of a tube railway or tramway subway will depend upon local geographical and commercial conditions, but it is a curious fact that, so far as this country is concerned, no town with a population of less than half a million has ventured to introduce a tube railway or electric "rapid transit" line.

On various parts of the Continent there have been running for some years now a combination of electric light railway and tramway which may have far-reaching results. Many of these are apparently ordinary tramcars and trailers so long as they are in the town, but as soon as they reach the outskirts they travel on a special track of their own. With stops five miles or so apart an average speed of upwards of thirty miles an hour is easily obtained. This system has already proved of great value in bringing passengers and country produce into the cities, and would be of great service in distributing populations if its use were more widely practised.

Trams on special tracks of this description are to be seen in the outskirts of Sydney, and also, of course, in many parts of Holland, though in both these cases the stops are too frequent to obtain the full use of rapid transit facilities.

A most concise and comprehensive report on "The Passenger Transportation Problem" has recently been issued by the General Manager of the Manchester Corporation Tramways, and forms an excellent summary of what has so far been achieved in this direction in America and the principal cities of the Continent.

There is, however, still a wide field for investigation as to the methods of transit most suitable for particular localities, and it is clearly not possible to do more than generalise one or two principles upon which most authorities are agreed:—

(1) Electric "subways" or tube railways can only be commercially successful where the traffic is large and constant. Sub-surface railways are therefore only suitable for communities with a population of over half a million or more. Overhead railways are almost equally costly as tubes, and by reason of their noise and ugliness are generally regarded as unsuitable to English conditions.

(2) Tramways and motor omnibuses are of more service when run in conjunction with rapid transit lines. In Boston, U.S.A., tramway subways, somewhat similar to that under Kingsway, have been in operation for some years, but owing to its narrow streets and congested site, the problem in Boston is a very special one.

(3) Special tracks should, if possible, be provided for tramways, particularly outside the built-up areas. Special tramway tracks on wooden sleepers laid in grass have been very successful in many parts of the Continent, and they are now being introduced in the new arterial roads recently constructed in the outskirts in Liverpool.

Arterial Roads.—For many people town planning begins and ends with the planning of roads, and there can be no gainsaying that the main roads into and out of a town are the skeleton on which the plan will hang together. They may, in some instances, be the "bones of contention," but all will be in agreement with the general principle of fixing the routes needed for new main roads, including, of course, reasonable circumferential and cross-roads. The routes for arterial roads should be laid down at an early stage in the town plan, and definitely secured or sterilised from other uses.

It is remarkable how many of our large towns are now considering this problem of arterial roads. There is evident, too, in this country a tendency towards "circular roads" in addition to radial routes, which, however, must always take the bulk of the traffic.

Liverpool has already constructed a fine circumferential boulevard.

Birmingham has prepared a scheme showing a circumferential road 100 feet wide practically encircling the city.

The London Traffic Branch of the Board of Trade has also given very considerable attention to this matter, and the conferences of municipal authorities in Greater London have, with the assistance of this institution and other professional bodies, at last agreed upon a comprehensive scheme of main arterial and circumferential roads for Greater London, the total length of the proposed roads approximating 100 miles.

The financing of the proposals, where so many authorities are concerned, is, however, a difficult matter, and the signs all seem to point to the necessity for making main roads a national matter.

In most other countries "*routes nationales*" have long been an accomplished fact, and the importance of the national point of view must not be lost sight of.

The Road Board established by the Government for this purpose is a recognition of this principle, and it is to be hoped that in the stress of these stormy times the principle of national responsibility for the "king's highway" will continue to be maintained. Main roads are the property of the nation and should be a national matter.

Roads and Road Widths.—Much discussion and many conferences during the past six years have taken place on the question of road widths and construction, especially perhaps as to the allocation of space for various classes of traffic.

The general principles arrived at may, I think, be reasonably summarised as follows:—

To secure easy and rapid transit.

(1) Classification of roads is desirable.

(2) Provision for fast and slow traffic (fast traffic should not have to slow up for cross-traffic), and separate tracks for tramways.

(3) Sufficient width of roadway for the traffic, but not too wide to be maintained.

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(4) Sufficient width between buildings for all future purposes.

To secure the amenity of the highway:—

(1) Good views from the road—preserving view points.

(2) Good views of the road—trees, but not too thickly planted.

(3) Pleasant walks alongside the road—grass and trees where possible.

(4) Pleasant halts by the way—an occasional village green or open space.

It should be borne in mind that estate development is not necessarily an object of main roads.

And in the lay-out of estates the principles laid down in my Paper at this Institution six years ago still hold good, viz.:—

(1) Main routes must take the direction required by the traffic and contour of the ground.

(2) Geometrical planning is not necessarily satisfactory.

(3) Long straight streets, when adopted, should have a definite motive.

(4) Slight curves or irregularities in frontage lines and building lines may often be adopted with advantage.

(5) Line of sight should in most cases be restricted within reasonable limits.

Relaxation of By-Laws.—A very important point on which most people are now agreed is, that while it is desirable to have a minimum distance between the building lines, a hard-and-fast by-law width is undesirable whether it be 40 feet or 50 feet (or 66 feet as in the Colonies).

The power to fix building lines is important.

The width of macadam or roadway paving provided should be dictated by the use to which the street is put.

In residential streets the remaining width available may reasonably be devoted to grass margins and tree planting.

The relaxation of by-laws, allowed by the Act to be introduced into town-planning schemes, may also in some cases be usefully applied to the by-laws dealing with buildings. The by-laws, for instance, requiring party-walls to be carried above the roof might in most cases reasonably be waived, and there is also something to be said for the suggestion that in country districts wooden buildings might be permitted subject to reasonable restrictions. Even under the London Building Act it is possible to build a wooden house provided it is 30 feet from the adjoining property or any other building, and it should be at least possible to do the same in the country.

(To be continued.)

ANIMAL WORSHIP IN ANCIENT EGYPT.*

BEFORE the art of writing had been evolved, and long before the wonderful Egyptian system of religion known to have existed in later times, animals played a very important part as symbols to the pre-dynastic ancient Egyptians.

On the jars found in the tombs of this very early period, *circa* 6000 B.C., is often depicted a design representing a boat or village with a mast (or pole), and an object on the top of it. These masts are intended to be seen at a distance, to indicate the name of the village or race of people inhabiting the same. Some of these signs come down to later times, such as the elephant to designate the nome (or locality) of Elephantine.

In pre-dynastic times the animals, &c., used as ensigns had no religious significance; they were merely totems—*i.e.* the ensign of a clan.

We find the same idea among other primitive people—*e.g.* North-American Indians. A petition addressed by certain Indian chiefs to one of the Presidents of the United States, reclaiming possession of a chain of lakes in the neighbourhood of Lake Superior, was thus depicted: The head man of each tribe is figured by the totem, or symbolic animal of his clan, as the crane, the marten, the sloth bear, the catfish, &c. These creatures are represented as walking in procession, the crane taking the lead, and the catfish bringing up the rear. The eye and the heart of each is carefully indicated. Beneath their feet is seen a sheet of water, probably Lake Superior, which communicates by a tributary stream with the little lakes for which the Indians petition. From the eye of the crane is drawn one line leading round to the coveted lake district, and another line going off into space, and supposed to lead to the eye of the President of the United States. From the eyes of the marten, sloth bear, catfish, &c., are drawn similar lines leading to the eye of the crane, to indicate their views are all the same as his. A line is also drawn from the heart of each creature to the heart of the crane, showing that the heart's desire of all is identical. This is a very fine example of pure picture-writing.

To return to ancient Egyptian animals. We find the god Horus, from the earliest times represented as a hawk or falcon in a scene where he has conquered on the field of battle, and has taken 6,000 prisoners, which he is bringing to the king. This, again, is symbolical picture-writing, for the bird is perched on the tuft of six stalks, each of which represents the sign for 1,000. A head tied to the ground from which the stalks spring is the head of the enemy. The falcon is provided with one claw, with which he maintains himself on the tuft of stalks, and with a human arm and hand with which he holds a cord attached to the enemy's head.

In many mythological texts is related the legend of the enmity between Horus (a falcon) and Set (a greyhound). Some have seen here the struggle between Good and Evil. But what it really recalls is the struggle between the two races, the greyhound from the mountainous district of Libya in the north and the falcon from Arabia in the south, to dispute for the possession of Egypt. Horus also rejoiced in the title of the "Crusher of the lapwings" (lapwings being a term for the enemies of Egypt or a turbulent tribe).

On a palette, now in the Museum at Cairo, we see the totemic animals busy destroying the fortresses of their enemies. How was the transition between the totem and the god effected?

The oldest Egyptian deities generally have their names written on a sign, which is a remnant of the ensign and which eventually stood for god in hieroglyphics.

But the real gods did not exist for the Egyptians until they took a human form towards the end of the second dynasty. Set, with the head of a greyhound, wearing the crown of Upper Egypt, is one of the earliest. In spite of his human form it is an animal that is represented, but an animal that has become a god.

We see the figures of animals performing human actions, breaking down fortresses with pickaxes, holding with one claw a mace and with the other a shield. We see the falcon with an arm, and the ensign terminated with a hand.

What is there surprising in the Egyptian pushing logic still further and ending by giving the totemic animal which has become a god the entire body of a man? The head of the animal was naturally preserved, as it constituted the original characteristic of the god. But aided by arms, legs, and the whole human body, the god could, in his new form, exercise all human actions. So from the commencement of their appearance on monuments, the god with an animal's head is not a man with the head of an animal, but an animal with the body of a man. It is the animals which gave birth to the gods, not the gods which inspired the idea of adoring the animals. Moreover, the Egyptian gods were not ashamed of their humble origin.

The greater number of them never bore any other

* Abstract of a lecture by Miss Emily Paterson, delivered before the Egypt Exploration Fund at the Rooms of the Royal Society, Burlington House, W.

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name than that of the animal to which he owed his existence:—

Haur = falcon = Horus.
Asch = greyhound = Set.
Unn = hare = Osiris.
Hagit = frog = Hekhet.
Anubis = jackal = Anubis.

One of the forms of the god Anubis is called Ap-uat, *i.e.* "the opener of the ways." This name is due to the fact that the paths made by the jackal are in many cases the sole tracks over the mountains, and are the true guides that enable the wayfarer to avoid the dangerous crevasses.

The animal worship of the ancient Egyptians is familiar to all, but is as little truly understood perhaps as any phase of their religion. There are two distinct classes into which animal worship must be divided:—

1. The worship of individual animals.
2. The setting apart of certain species as sacred.

The idea of an animal incarnation of deity is thoroughly Egyptian. The one great advantage the dead had over the living appears to have been that they could change their shapes into that of animals, plants, or even gods. The Egyptians wanted a visible god to worship, and therefore frequently worshipped their kings as the incarnation of a special deity; but this had the great drawback that, unlike God, he could not be omnipresent. To get over this difficulty they had recourse to animal worship, for it would have caused much jealousy and difficulty had other men been allowed the divinity of the king.

If a god had the power of action and could eat and drink, that was sufficient to satisfy the ancient Egyptians. It was also very easy for the priests or king to control the actions of an animal to imply whatever they wished, or at any rate interpret the actions according to their will. If the sacred animals could not or would not help in an emergency, they were beaten or even killed. To appease the wrath of the god, incarnate in the said animals, their bodies were embalmed to ensure immortality.

The animal chosen as the incarnation of a god was supposed to possess the chief characteristics of that deity. Hence the ram of Mendes and Bakh, the bull of the god Menth. The ram and the bull were dedicated to the gods of Nature as possessing exceptional procreative vigour.

The sacred animal was distinguished from others of its species by certain marks known to the priests; when it was found it had to pass through a special training before being introduced in the temple. The death of the sacred animal did not involve the death of the incarnate god, who at once sought fresh incarnation in another animal of the same species and appearance as the one that had died. Should a layman kill a sacred animal, even by accident, he was condemned to death.

The respect in which whole species of animals were held in different nomes was quite another matter. The animals in this case were not honoured as gods themselves, but respected as being favoured by the gods. It was believed that a certain deity inhabited one animal of a special species, and the whole species was respected for fear the one animal should meet with any injury.

Different species of animals were respected in different nomes, which led to much dissension, and even wars. For the people of one nome would kill the sacred animal of the neighbouring nome.

The sacred animals of Egypt were some of them fabulous creatures, such as the griffon, the sphinx, and the phœnix or bennu. The latter symbolised the morning sun arising out of the fiery glow of dawn, and finally served as a symbol of resurrection.

The best known of these fabulous beasts is the sphinx, which has been so little understood and wrongly represented from the Greeks onwards. The original idea of the sphinx was that of a human-headed quadruped living in the desert, and supposed to be the favourite incarnation of the sun-god Ra when he desired to protect his friends. Hence Horus is said to have taken this form when fighting against Set. But Greek and Syrian influence had quite altered the characteristics of the sphinx when we come down to the Roman period. The face of a sphinx was usually a portrait of the reigning Pharaoh, and since there were more kings than queens, the Egyptian is usually male. That is one point which the Greeks seem to have lost sight of, as a Greek sphinx is invariably represented with a female head. When a sphinx has the head of some animal, as the ram-headed sphinxes which form the avenues leading from the great temple of Amen at Karnak to the lesser temples, it represents the incarnation of a god to whom the ram is the sacred animal, and is termed a criosphinx.

The great goddess Hathor, who came out of the mountain of the west and received the dying sun in the glow of sunset, was supposed to receive the dead on their decease. The cow, sacred to Hathor, was dedicated to fertile and food-producing deities. M. Naville, when excavating at Deir el Bahari for the Egypt Exploration Fund, had the great good fortune to come across an untouched shrine of this goddess. He says, "The rubbish having been cleared from the north side, suddenly there appeared the top of an arch made of two blocks leaning against each other. This arch was the forepart of an arched room occupied by a Hathor cow of natural size in sandstone, painted and in a perfect state of preservation." This is the first time a shrine has been found with the goddess inside.

A NEW HOUSING POLICY.

AT the National Congress held at Caxton Hall, London, under the auspices of the National Housing and Town Planning Council, to consider "Home Problems After the War," the following memorandum was submitted by the chairman, Councillor Harold Shawcross, J.P., entitled, "Suggestions for a New Housing Policy."

In this memorandum it is attempted to establish the following propositions:—

I. That, owing to a variety of causes, it is unlikely to expect working-class houses to be built in the future by private enterprise in sufficient numbers to provide for the increase of the population and the replacing of worn-out dwellings no longer fit for human habitation.

II. That, inasmuch as all parties in the State are unanimous in thinking that it is the duty of Local Authorities to see that the working classes in their districts are properly housed, it is very desirable that new methods should be found to enable Local Authorities to co-operate with different forms of private enterprise in providing houses for the people.

PART I.

That, owing to a variety of causes, it is unlikely to expect working-class houses to be built in the future by private enterprise in sufficient numbers to provide for the increase of the population and the replacing of worn-out dwellings no longer fit for human habitation.

Causes of the Shortage of Houses.—It is undeniable that for several years there has been almost everywhere a great falling-off in the number of working-class houses built yearly.

The following may be cited as amongst the causes which it is generally admitted have in late years discouraged investors from putting their money into the financing of building operations or the purchase of house property:—

(1) The increasing attractiveness of other forms of investment.

(2) The gradually increasing cost of building.

(3) The requirements of Local Authorities in regard to repair and alteration of houses to make them sanitary.

(4) The tendency for rates to rise, and the consequent raising of rents by owners, and the opposition of tenants to this.

(5) The increasing dearness of money.

(6) The effects of the Finance Act of 1909.

(7) Collection of Rates and the Compounding Limit.

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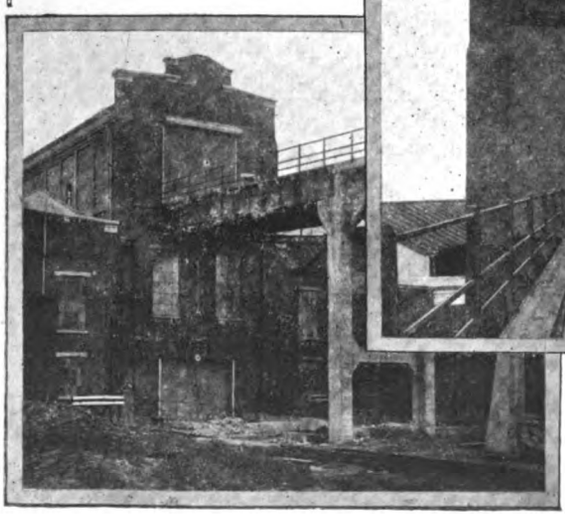
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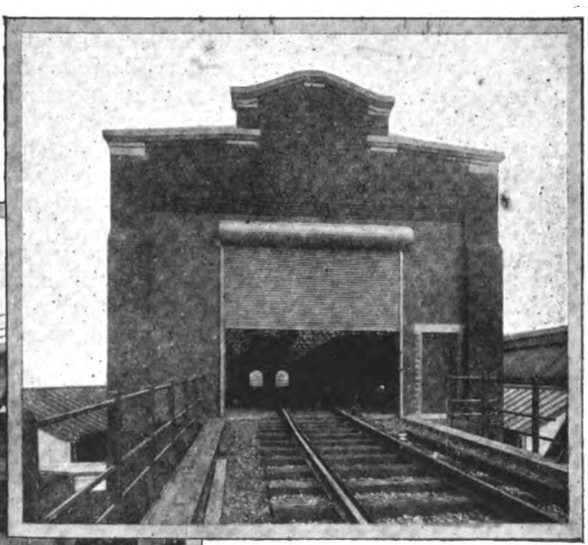
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(8) Higher Stamp Duties and Conveyancing Charges, which hinder the transfer of land and houses.

(9) In areas which are scheduled for town planning purposes the uncertainty that exists, whilst the scheme is being prepared, as to what are likely to be its provisions.

It will be as well to consider briefly the above:—

(1) *Increasing Attractiveness of other Investments.*—There is no doubt that the bulk of the working-class houses in town and urban districts are owned by small investors. Formerly this kind of investment was the most attractive one to the man who had saved a little money, and indeed almost the only one that offered itself.

Cautious by nature, he desired something that would not run away, and was content with a moderate return on his capital provided it was a safe and permanent one.

In those days sanitary inspectors were little known and seen, and the idea that owners would be required to spend money on their property, or that houses would ever be closed or pulled down, except from disuse, would not have occurred to anyone. But to-day the position is quite different. Other forms of investment are now offered to the public, such as loans to municipalities, debentures and preference shares in sound undertakings, and in some districts loans to manufacturing concerns which offer what is usually a safe investment without trouble. Also the growth of the co-operative movement must have absorbed a large amount of working-class savings. For these reasons the small investor no longer cares to put his money into houses except where he wishes to own the house he lives in in order to be secure of a home where houses are scarce. It is difficult now for speculative builders to get rid of their houses, and therefore there is not the same inducement for them to build.

(2) *Increased Cost of Building.*—Inquiries in various quarters show that the cost of building is estimated to have increased from 20 to 35 per cent. during the ten years from 1904 till 1914 before the war. We think that if this increase is taken at 25 per cent. it is a reasonable estimate. A fair sum to put down for the cost of the ordinary workman's house in the provinces built ten years ago would be £125. If we add 25 per cent. to this we get £155 as the cost of the same house in 1914. The above figures are used later in making a comparison of rents necessary in 1914 before the war and rents ten years earlier.

(3) *Increased Requirements of Local Authorities.*—It does not seem necessary to emphasise this point except to say that the very proper demands of Local Authorities upon owners in order that houses should be made fit for human habitation have undoubtedly caused a scare amongst many property owners. In many cases great losses have been incurred by individual owners whose sole income is derived from the rents of a few houses, and who have no capital to carry out the repairs and alterations properly demanded in the interests of public health.

(4) *The tendency of Rates to rise and the consequent raising of Rents by owners, and the opposition of tenants to this.*—In the Urban Land Report the rise in rates between 1901 and 1910 was given as an average of 11*d.* in the £. In tables published annually by the Borough Treasurer of Preston the rates of most towns are given. From these it would appear that between 1904 and 1914 there has been an average rise of 5*d.* in the £. As so much has been said about the rise of rates owing to the war, it is interesting to find from the same tables that the average rates in 1915 were 4*d.* more in the £ than in 1914.

(5) *The Increasing Dearness of Money.*—In the Urban Land Report a list of investments was given showing the different returns from various trustee stocks in the last dozen years prior to 1914, at the prices quoted each year. From this it would appear that the current rate of interest has advanced in that time ¾ per cent.

(6) *The Effects of the Finance Act of* 1909.—There is no doubt that in some districts this Act had a deterrent effect upon cottage-building for some time after its passing. The criticisms passed on this measure—somewhat intensified by political animus—were proved to have some foundation in fact when the Lumsden judgment showed that one clause of the Act was interpreted as having quite a different meaning to what was intended. It is probable now that legislation is promised to remedy the admitted injustice from the Act as drafted, that the bad effects will pass off. So long as increment duty is charged on the value of the land only, there should not be much fear of owners being liable whilst the land is used for housing the working classes; but should such houses be pulled down on expensive sites in order to build other property, then duty would be recoverable.

In any legislation passed to amend this Act it will be useful to have a clause providing that no increment duty shall be charged as long as the land is used for housing the working classes.

(7) *The Collection of Rates and the Compounding Limit.*—The difficulty of building working class houses to be let at rents within the compounding limit has no doubt been a check upon building in many towns. The fact that to cease to compound for the house makes it necessary to charge 4*d.* to 6*d.* more rent for a similar house in order to give the same return to the landlord has deterred builders from going on with their operations. The fact that the discount upon the rates for houses at or below the compounding limit is given for a specific purpose, *i.e.*, to prevent the Local Authorities losing rates through empty houses, has ceased to have much effect. In most places there are no empty houses and the discount given to the landlord is clear gain to him.

(To be continued.)

LIVERPOOL ARCHITECTURAL SOCIETY.

THE Liverpool Architectural Society held its annual meeting, at the end of the sixty-eighth session, on the 17th inst., in the rooms, 13 Harrington Street. The adopted report showed a membership of 106, and that twenty-nine members and associates, or rather more than one-fourth, had joined the forces, generally with commissioned rank. In regard to the Town-Planning Act, the council held that if architecture is to take its proper place in regard to town-planning, the council consider it is necessary that an architect should be professionally engaged on each scheme during the early stages of its preparation, and this is a condition which can only be brought about at the instance of the Local Government Board.

Officers were elected as under:—President, Mr. E. Percy Hinde; vice-presidents, Mr. G. Hastwell Grayson and Mr. T. Taliesen Rees; hon. secretary, Mr. Richard Holt; unofficial members of the council, Messrs. H. M. Appleyard, W. Glen Dobie, T. Edgar Eccles, C. W. Harris, P. C. Thicknesse, A. Thornely, and W. E. Willink (Fellows), and Messrs. L. P. Abercrombie and S. M'Laughlan (Associates); hon. auditors, Messrs. F. G. Briggs (Fellow) and L. B. Budden, M.A. (Associate).

It was agreed unanimously to elect as a Fellow Mr. Raoul Gariepy, Licentiate R.I.B.A., Montreal, Canada, proposed by the council.

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A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BEDFORDSHIRE.

Bedford.—The Soldiers' Home, Kempston Road: addition.

House, Castle Road, for Mr. T. Rogers.

Motor show-room, Cauldwell Street, for Messrs. W. Nicholls & Sons.

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ENGLAND.—*Continued.*

BUCKINGHAMSHIRE.

Aylesbury.—The "Bell" Hotel: alterations.
The "New" Inn: stables for Messrs. Roberts & Wilson.
Marsh Gibbon.—The Manor Farm: additions.

CHESHIRE.

Stalybridge.—Motor house, off Stamford Street, for Messrs. J. Ridyard & Sons.
Mill, Quarry Street: rebuilding for Messrs. Robert Platt, Ltd.

DORSET.

Poole.—The "New London Tavern": alterations and improvements.

DURHAM.

Stanley.—Twenty-four houses for the South Moor Colliery Co.

ESSEX.

Ilford.—Nos. 11-55 (odd only), Hickling Road, for Mr. J. Seymour.

KENT.

Luton.—Furniture store, Connaught Road, for Mr. H. W. Pett.
Rochester.—Proposed slaughter-house, Blue Boar Lane, for Messrs. E. J. Payne & Co.
Tilmanstone.—The "Star" Inn: additions and alterations. Messrs. Jennings & Duthoit, A.R.I.B.A., architects, 6 Claremont Place, Dover.

LANCASHIRE.

Accrington.—Church, Spread Eagle, Oswaldtwistle. Mr. Cunliffe, architect, 2 Birch Street.
Castleton.—Works: extensions for Messrs. J. Orr & Son.
Heywood.—Works, Prettywood: additions for Messrs. J. C. Kay & Co., Ltd.
Rochdale.—Engine-house, Bridge Street, for Messrs. Mitchell & Son.
Twelve houses. Mr. J. Blomley, builder, 24 Exeter Street.

MIDDLESEX.

Ruislip-Northwood.—Two houses, Ickenham Road. Messrs. A. & J. Soutar, architects, 8 King William Street, Strand, London.
Southall.—Factory: extension for the London Chemical Company.
House, Avenue Road, for Mr. G. Field.
Lock-up shop, Beaconsfield Road, for Mr. H. W. Banks.
Stables, Western Road, for Mr. W. J. Hanson.
Willesden.—Factory, Broadway, Cricklewood: extension for the British Caudron Co., Ltd.
Buildings, Neasden Lane, for the British Thomson-Houston Co.
Shop and works, Cumberland Avenue, Park Royal, for Messrs. Illingworth & Co., Ltd.
The Edinburgh Biscuit Works: additions.

NORFOLK.

King's Lynn.—Petroleum depôt, off Wisbech Road, for the Asiatic Petroleum Co.

SOMERSET.

Yeovil.—Offices, Court Ash: addition for Messrs. Atherton & Clothier.

SURREY.

Richmond-on-Thames.—No. 3 Hill Street: alterations for Mr. W. R. Howell.

SUSSEX.

Hove.—No. 24 Wilbury Crescent: addition for Mr. T. W. Bassett.
Motor show-room, Westbourne Place, for Mr. Eldridge.

WARWICKSHIRE.

Coventry.—Proposed W.M. Church, Earlsdon.
Ten houses, Fisher Road, for Messrs. N. Moss & Co.
Three houses, Foleshill Road. Messrs. H. Goode & Son, builders, Holmsdale Road.
House, Hastings Road, for Mr. F. Brookfield.
Two houses, Ransom Road, for Mr. J. Boyce.
Foleshill.—Proposed church, St. Paul's.
Stratford-on-Avon.—Gasworks: proposed new buildings.

WILTSHIRE.

Amesbury.—Proposed hotel for Usher's Wiltshire Brewery.
Salisbury.—P.M. Church. Messrs. G. Baines (F.R.I.B.A.) & Son, architects, 5 Clement's Inn, London. Mr. J. Nichol, contractor, Bitterne Park, Southampton. (£3,463 for the first section.)

YORKSHIRE.

Barnsley.—Garage, &c., off Sheffield Road, for Mr. E. Millett.
Premises, Back Queen Street, for Mr. H. Ashworth.
Store and garage, Pindar Oaks siding, off Doncaster Road, for the Anglo-American Oil Co., Ltd.
Hull.—Proposed parish church, Drypool.
Stanley.—Two houses, Third Avenue. Mr. W. Bagnall, builder, Eastmoor, Wakefield.

WALES.

Aberayron.—House, Cei Bach, Llanina, for Mrs. Ward (of Enfield, Middlesex).
Burry Port.—Six houses and a shop, near the Derwydd. Messrs. H. Billings & Sons, builders, Oystermouth Road, Swansea.
Caerphilly (near).—Forty houses, for the Pontypandy Building Co. Mr. W. Dowdeswell (of Cardiff), architect.
Holyhead.—House, Walthew Avenue, for Messrs. W. Williams & Owen.

SCOTLAND.

Aberdeen.—Home for sailors and soldiers, College Street: additions. Mr. J. Rust, architect, 224 Union Street.
Two houses, Ashley Gardens. Messrs. D. & J. R. McMillan, F.R.I.B.A., architects, 105 Crown Street; also
Two houses, Brighton Place.
No. 55 Blenheim Place: additions and alterations. Mr. R. R. Gall, architect.
No. 60 Union Row: additions and alterations. Messrs. Wilson & Walker, AA.R.I.B.A., architects, 375 Union Street.
No. 199 Union Street: alterations. Mr. G. R. Mitchell, architect, 148 Union Street.
Cullen.—House, Grant Street: alterations for Mr. W. E. Taylor.
Glasgow.—Works: alterations for Messrs. R. & J. Dick, Ltd.

IRELAND.

Richhill (near).—Proposed flax-scutching mill, for the Armagh Farmers' Co-operative Society, Ltd.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 4,756. March 26, 1915.—William R. Kerr and W. H. Murphy, c/o The "K.M." Concrete Steel Co., National Mutual Buildings, corner Collins and Queen Streets, Melbourne, Australia. Reinforced concrete specialists. Device for reinforcing or bonding concrete in building construction, and No. 4,803, March 27, 1915. Device for securely fastening two bars or rods at an angle to each other.

13,851. September 29, 1915.—B. M. Hodges and Henry Hodges, Twynham Works, 31 High Street, Christchurch, near Bournemouth. Ladders.

13,802. September 28, 1915.—S. M. Rutnagur, 27 Meadows Street, Bombay. Means for ventilating buildings.

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HEXHAM ABBEY font cover, the restoration of which has been successfully accomplished through the efforts of the Rev. Canon Savage, was formally dedicated last week by Bishop Ormsby. The restored tabernacle is built in storeys, and its total height is 20 feet 6 inches. In scale it is the tallest in England, that at Uffard, Suffolk, the tallest hitherto, being 18 feet 9 inches. Richly and intricately carved, it is a beautiful and interesting acquisition to the Abbey.

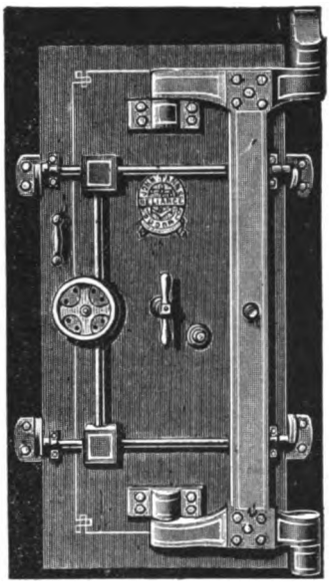
THE result of the ballot amongst members of the Amalgamated Society of Carpenters and Joiners on the proposal to continue the present general levy was announced as follows:—In favour, 9,235; against, 4,327; majority in favour, 4,908. In announcing the result the Executive Council said that it was encouraging to know their members were prepared to make an effort to meet any financial difficulties which might arise at the conclusion of the war, and that they realised the importance of building up their funds while trade is good.

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FORTHCOMING EVENTS.

Monday, May 8.

Surveyors' Institution : Paper entitled "A Scheme for the Development of Agricultural Land," by Mr. F. N. Keen (Barrister-at-Law), at 5 P.M.

Tuesday, May 9.

Illuminating Engineering Society : Discussion on a Report by the Research Committee of the Society, at the Royal Society of Arts, Adelphi, W.C., at 5 P.M.

Thursday, May 11.

London Society : Paper entitled "Shakespeare's London," by Mr. T. Fairman Ordish, F.S.A., at the Royal Society of Arts, Adelphi, W.C., at 7.30 P.M.

Monday, May 15.

Royal Institute of British Architects : Ordinary Meeting, at 4 P.M.

ARCHITECTURE AT THE ROYAL ACADEMY.

THE Architectural Room at the Royal Academy this year, as, indeed, the show generally, reflects most unmistakably the influence of the war upon architecture and architects, as upon all other art and artists, but in a more intense degree. The number of works exhibited this year in the Architectural Room is 146, as against 190 in the preceding year, but of the number now hung a larger proportion than usual seems to be made up of small drawings and designs for stained glass, so that there shows a considerable amount of brown paper, despite the fact of there being some very large frames devoted chiefly to town-planning schemes.

Town planning, indeed, bulks largely in this year's show of architecture. We have Mr. Thomas H. Mawson's fine and comprehensive "Town-planning Scheme for Athens" delineated in three large drawings, one showing a "diagram of park system"; a second, "details of working-class area (second-class dwellings)"; and the third "bird's-eye view of Governmental centre." It will be very many years, we fear, before Mr. Mawson's admirable design reaches consummation, for the peculiar neutrality of Greece in the war is scarcely likely to greatly advance either her credit or her cash.

Mr. Robert Atkinson's "Bath Improvement Scheme" also occupies considerable wall-space with three large drawings, first, a plan of the whole scheme; second, a perspective view of the central square looking towards the concert hall; and third, a view of the "proposed forum" looking northward and backed by the Abbey Church. This scheme, we may hope, stands a better chance of realisation than we foresee for Mr. Mawson's new Athens, but, even so, will have to wait a while.

A third town-planning design is shown in a "Model to Scale of $\frac{1}{250}$ of a Town-planning Scheme for the City of Oporto, Portugal," and deals with that part of the city which slopes upwards from the Praca da Liberdade to the Church of the Trinity, one of the more gentle ascents in this hilly city which Mr. Barry Parker has laid out as a residential quarter with municipal offices.

Neither the Athens nor the Bath scheme can be said to be absolute novelties as far as the public more particularly interested in town planning are concerned, and the same remark applies to "A Design for the Improvement of Charing Cross" by Mr. D. Barclay Niven and Mr. T. Raffles Davison, which has been described and discussed at more than one public meeting, but is nevertheless quite topical in view of the Bill put forward by the South-Eastern and London, Chatham and Dover Railway for strengthening and perpetuating the present ghastly eyesore.

All the architect members except Mr. Lutyens exhibit this year, but from the quality of the work they contribute some of them might very well be included in the list suggested by a daily newspaper as a suitable addition to the last page of the catalogue, under the heading, "*The following Academicians and Associates ought not to have exhibited this year.*"

Sir Thomas G. Jackson, Bt., R.A., shows us in two drawings his design for "New Buildings for Hertford College, Oxford," the one giving the "front to Holywell Street" and the other the "front to Broad Street." The former, a sketchily drawn pen and ink perspective, is clearly a block of undergraduates' rooms of three storeys and an attic, with mullion and transome windows, straightheaded on the ground floor and with elliptical or four-centred heads on the upper floors. Rhythm is obtained by three gables, one in the centre, the others at the ends, with flat segmental oriels in two storeys beneath them. The second drawing is a little difficult to follow, as part of the front is made up of the Indian Institute and part of the "Old Chapel of Our Lady at the Wall." Between these is a presumably new building of late Gothic detail, with a straight-sided oriel and an elaborate chimney-stack, and on the other side of the "Old Chapel" part of a façade with Early English renaissance treatment.

Sir Aston Webb, R.A., and Sons also have two frames, one showing "Extensions to the Royal Naval College, Dartmouth," the other in three drawings, "one section of the cottages and the Hall" at the Whiteley Homes, Burhill Park, Walton. The extensions to the Royal Naval College deal with a hill-side site, and there are consequently several "ground floors" at different levels, terraces for which are obtained partly on ground and partly on flat roofs, which are extensively adopted. The main block shown is a long and dignified building, simply treated in an eighteenth-century manner reminiscent of Chatham. The three drawings of the Whiteley Homes are described respectively as "Two blocks of cottages and the Whiteley Hall," "Two-storeyed cottages," and "Back view of cottages and Hall." The cottages grouping with the Hall are one-storeyed. In his design Sir Aston has made good play with the roofs, and in the two-storeyed blocks has made use of an open stair and balconies in a triple arcade; thus there is plenty of light and shade and a satisfactory avoidance of deadness and monotony such as too often characterises the design of an "institution."

Mr. Reginald Blomfield, R.A., contents himself with one drawing only, a "Design for Memorial Slab to Sir L. Alma-Tadema, O.M., R.A.," for erection in St. Paul's Cathedral. Presumably, in his detail, Mr. Blomfield did not wish to fetter the sculptor too closely to a precise modelling of the amorini who support a shield above the tablet, on which are the conventional emblems of inverted torch and laurel wreath.

Mr. Ernest Newton, A.R.A., in a perspective in

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coloured crayons by Mr. Raffles Davison, shows his portion of "The Whiteley Homes," a group with two blocks of one-storey cottages and two of two-storey, in which latter a similar treatment of open-air staircase and balconies is adopted as we noticed in Sir Aston Webb's design. Mr. Newton's second drawing is a sketch design for "Houses on the Sanders Estate, Denmark Hill," shown in plans and elevations to ⅛-inch scale, and is an admirable example of effective treatment of terrace houses of quite ordinary and modest suburban character as far as size and cost are concerned. On the ground floor the houses form seven pairs of quasi semi-detached houses with a common covered passage between them. The monotony of an ordinary terrace of fourteen houses is avoided by the alternate setting forward and recessing of the alternate pairs as well as by a differential though symmetrical treatment of their form and detail. The design is one to which no speculating builder could reasonably object on the cost of expense, but we are somewhat doubtful as to the adequacy of the lighting in the kitchens.

Sir Ernest George, A.R.A., has but one drawing in the Architectural Room, entitled "Crematorium, Golders Green: showing late additions." The additions maintain the character of the original buildings, but there is a curious inaccuracy of drawing in the lines of the perspective which the colour is insufficient in attractiveness to counteract.

Professor Edward S. Prior, A.R.A., and Arthur Grove exhibit a perspective of the exterior of "St. Osmund's Church, Parkstone: nave and south transept," which is a curious collection of detail of presumably Romanesque origin eccentrically applied.

NOTES AND COMMENTS.

It is not going too far to say that one of the predisposing influences leading to the abortive Sinn Feinn rebellion was the conditions of living under which a large number of the inhabitants of Dublin have been forced to exist by the deplorable insufficiency in the city of decent housing accommodation. We have frequently recorded the efforts made by the City Council of Dublin to induce the Government to afford them financial facilities for improving the housing of their population, but our present muddlers in authority have adopted as one of their precious "principles" the fallacy that people can do without houses in war-time. The Minister of Munitions has realised that he cannot keep his department going without building houses for workers, but the rest of the incompetents have not grasped the fact that squalid living is the finest of hotbeds for revolution and rebellion, and that those whose mere existence is a misery under the housing conditions of Dublin are ready, like the Parisians of the eighteenth century, to listen to Sinn Feinner, German agent, or any crack-brained visionary who promises them a short if bloody road to deliverance from their misery.

We referred recently to the conference intended to be held at Portmadoc of those interested in the slate-quarrying industry for the purpose of making an attempt to revive that industry from its present parlous condition. This conference has now been held, and the most serious competitor of the natural material slate for roofing purposes was recognised to be the artificial Portland cement and asbestos article. The cheapness of the latter is its principal asset, but this is only gained by adopting a method of laying that takes risks. If the pitch is sufficient, and there is no great exposure to driving winds, the asbestos-tile roof will keep out the wet for most days in the year, but there are some days in every year when such a roof leaks like a basket. Often the penetrating moisture does not show because there is an underlining of the roof with wooden boarding. We would suggest to our friends in the slate industry that they should lay roofs lozenge fashion of single thickness of slate secured with metal clips, and not attempt to compete with a three-inch lap against the scanty substance of the asbestos-tile method.

For once an architect has succeeded in escaping liability for dry rot. In an action in Falkirk Sheriff Court, the plaintiff claimed damages for a floor that had rotted through being laid on the top of the deafening before this and the plaster were thoroughly dry. The successful defence was that the flooring was covered with a floor-cloth that did not allow the natural dampness in the new timber to evaporate, nor the boards to dry. But this defence might not have been sufficient if it had not been reinforced by the technical objection, upheld by the Sheriff, that the plaintiff was the wrong party to sue.

In an obituary notice of Mr. Thomas Wallis, the famous art dealer, the "Morning Post" relates the following story of Ruskin and a Meissonier, which Mr. Wallis used to tell, and which is a capital illustration to our thinking of the way in which "values" are created for old masters:—

From Prince Napoleon the dealer purchased the French painter's "Napoleon I. in the Campaign of Paris." It measured 12½ inches by 9½ inches, and Ruskin gave 1,000 guineas for it in 1869. Thirteen years later the great critic went to Mr. Wallis and said that he had drawn all the pleasure out of the picture and wished to sell it. "Sent it to Christie's," Mr. Wallis advised. "But will it bring as much as I gave for it?" asked Ruskin, doubtfully. "I'll see to that," said Mr. Wallis. At the sale Mr. Wallis and a French firm made a fight for the picture, and when Mr. Wallis won it at 5,800 guineas the auctioneer remarked, "Another Waterloo." Ruskin called at Pall Mall in bewilderment. "Is the report really true," he inquired anxiously. "Yes," even did not convince him. "When do Christie's pay?" was the next canny question. "Generally in a month," came the reply. "But," said Mr. Wallis, "if you like, Professor, I will give you a cheque for the amount." Ruskin hinted that he would like it, and he left the gallery with his new found riches in his pocket.

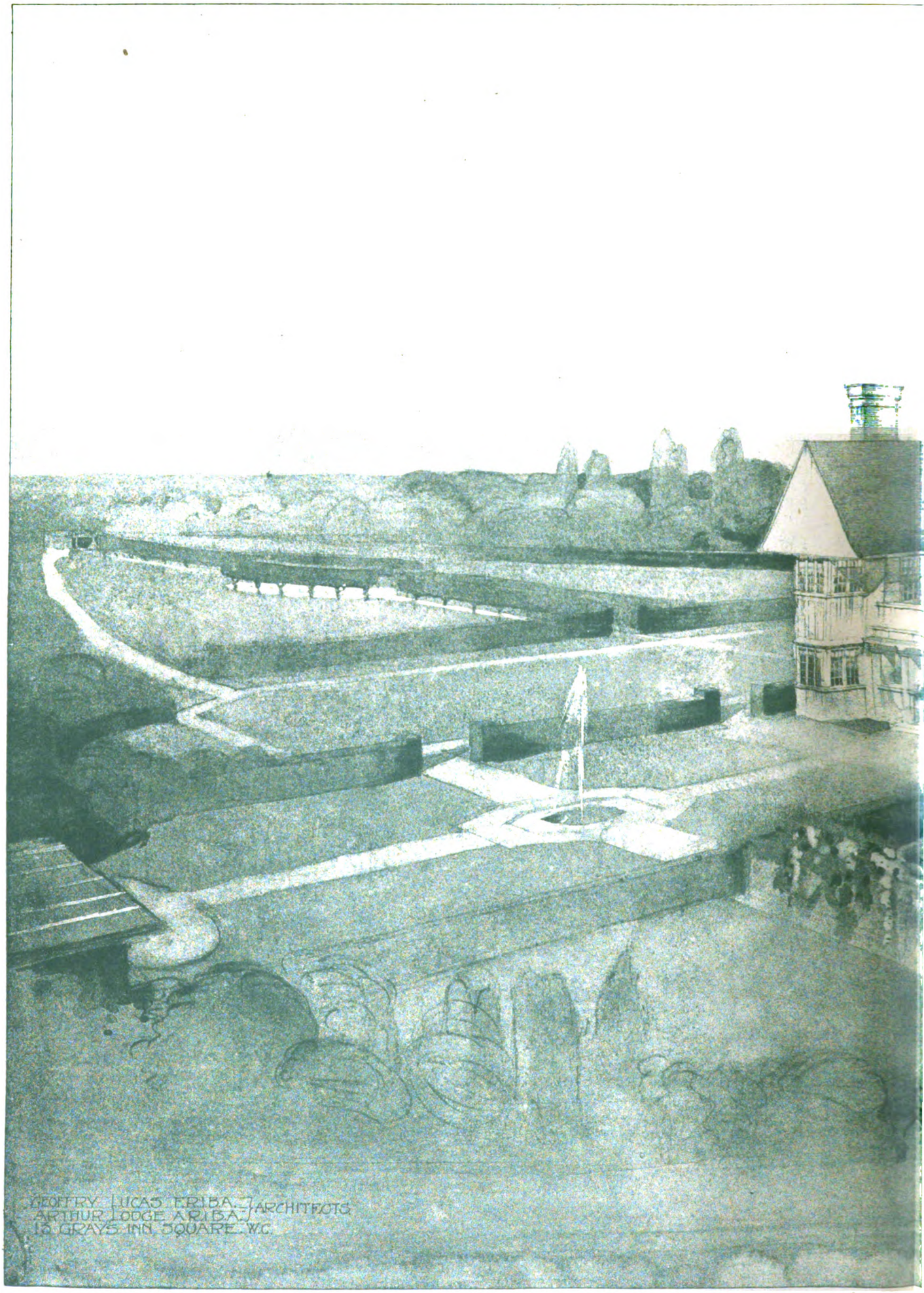
There is sound commonsense in the following recommendations in the "Yorkshire Post":—

Despite the vast improvement that has taken place in the design and construction of gas fires, cases still occur in which even the most modern examples of gas fires, guaranteed by their makers to discharge no products of combustion into the room, do in fact poison the atmosphere just as must as did the gas fires of an earlier generation, causing intense discomfort and injury to health. In all these cases the trouble may be traced to one or more of three causes; either a strong draught across the face of the fire, and ill fitting between the gas fire casing and the hearth opening, or a defective draught in the chimney flue. The former can usually be provided against by the user; the two latter involve calling in a skilled workman. There appears to be an idea that an easy way of getting rid of the trouble of a smoky coal fire occasioned by a chimney which does not draw is to put a gas fire in its place, whereas, of course, what probably results is that imperceptible gas fumes, instead of perceptible coal smoke, come into the room. Where a chimney draws badly, the proper treatment is not to change the fire, but to alter the chimney. But there are also cases in which gas fires delivering into chimney flues that, with coal fires, drew satisfactorily, have proved objectionable. The evil in such cases is usually due to the gas fire standing out beyond the wall and not filling the opening of the fireplace. If a free passage for air is left between the gas fire casing and the fireplace, naturally the suction set up by the warm air and the chimney will tend to draw cold air through this gap, whereupon not only is the draught

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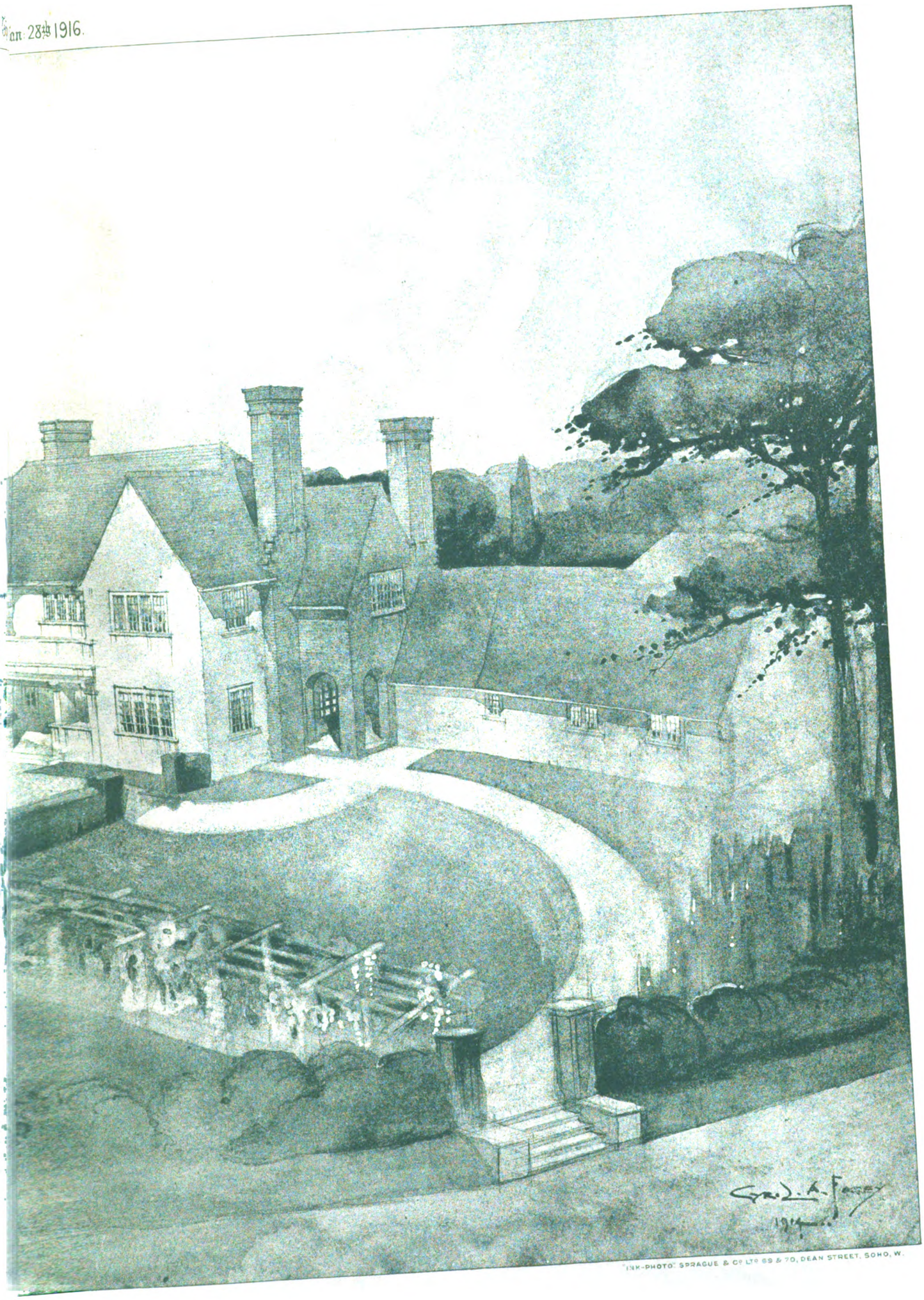


FIRST DESIGN FOR HOUSE

(Royal Academy Exhibition, 1915.)

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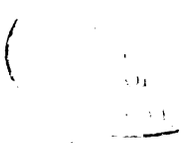
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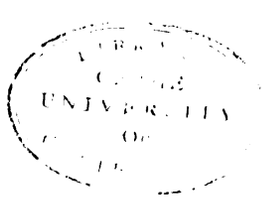


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E AT BURNHAM BUCKS.

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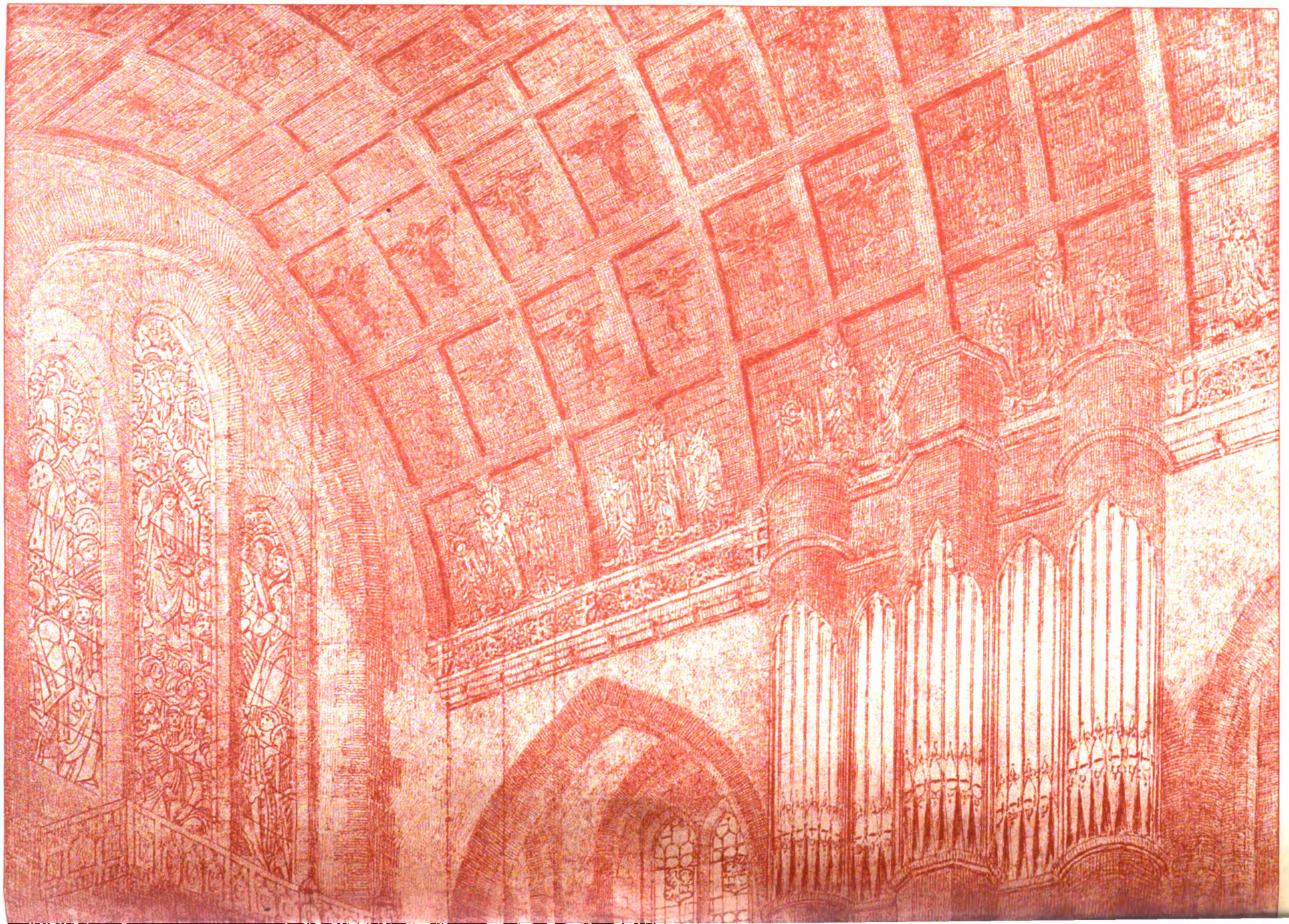




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S. MICHAEL'S CHURCH, GOLDERS GREEN: SCREENS, ETC.

Mr. JOHN T. LEE, Architect.

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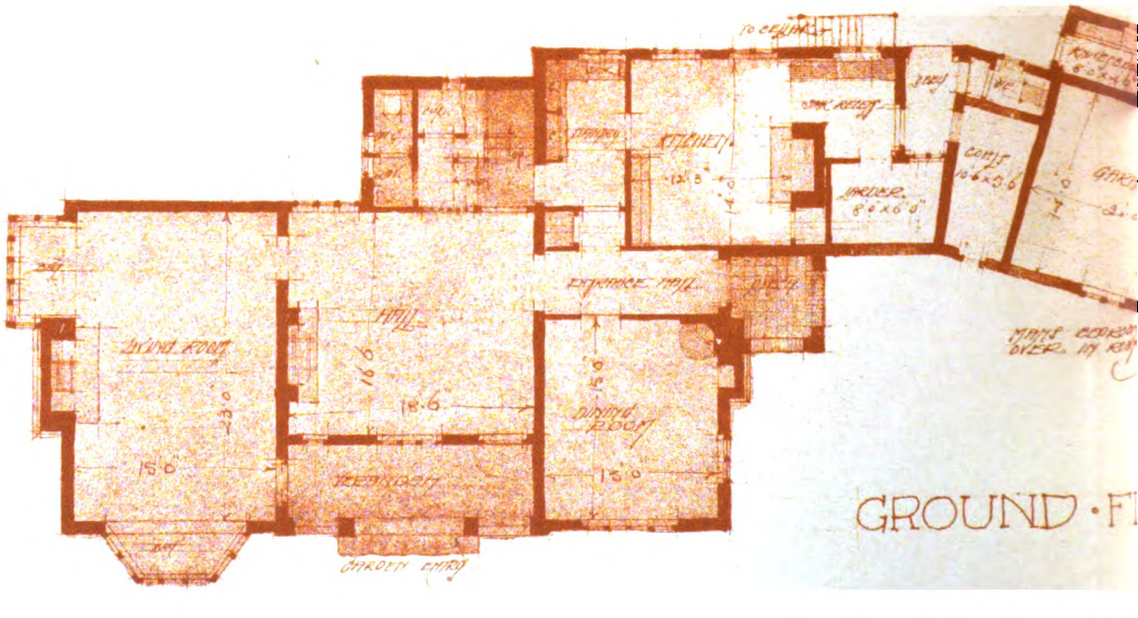
HOUSE AT BURNHAM, BUCKS. FC



SOUTH ELEVATION.



NORTH ELEVATION.



GROUND · FL

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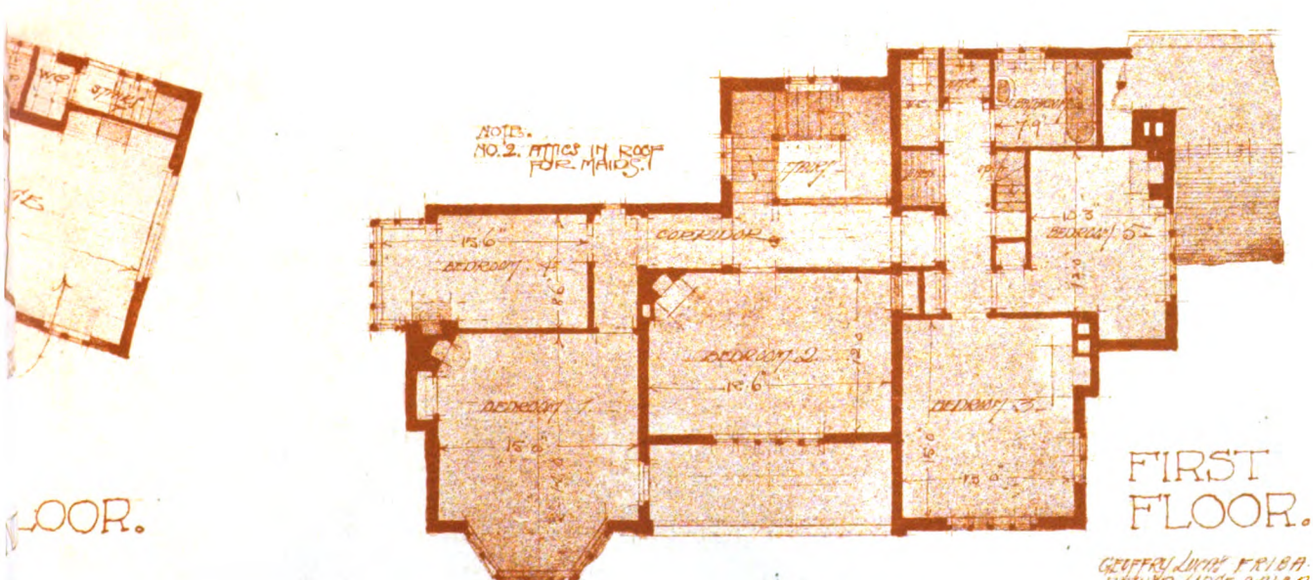
MISS PELHAM BURN.



EAST ELEVATION.



WEST ELEVATION.



FIRST FLOOR.

GEOFFREY LUCAS F.R.I.B.A. 4 HARCOURT
HERBERT LUCAS A.R.I.B.A. BUILDINGS E.C.
13 STAPLE INN
23 BEDFORD ST. STRAND. W.C.2.

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operating on the gas fire diminished, but so also is the total draught of the chimney. This is not to say that in every case an air tight joint must be made between the gas fire casing and the walls of the fireplace, for often a chimney having a strong natural draught can afford all the suction required for the withdrawal of the products of combustion, and still take in a certain quantity of cold air. Where this can be arranged the ventilation of the room is much improved, but it is nearly always desirable in such cases to extend the flue-pipe of the gas-fire several feet up the chimney. The extended use of the gas fire is becoming a national necessity, and gas authorities would do well, in their own as well as the larger interest, to see to it that every gas fire in use is fitted so as to work satisfactorily.

The executors of the will of the late Mr. Harry Hems have, in accordance with the bequest of the deceased carver, made an offer of the Chicago rood beam to St. Sidwell's Church, Exeter, and a vestry meeting, despite some opposition, has resolved to apply for a faculty for its erection. The rood was offered to the church in 1890, and again in 1891, but declined. Opinions in such matters are now more tolerant, and we hope that the application for the faculty may be successful.

A hardy annual is the cynical criticism of the hanging methods of the Royal Academy by those crowded out, and a letter has been extensively published in the daily Press suggesting:—

(1) That painters and sculptors who have exhibited for a number of years—say, five—should have special coloured labels (instead of the ordinary white labels issued by the Royal Academy) to attach to their works, thereby ensuring that their pictures when passed by the Council would be seen by the Hanging Committee.

(2) That the Council, when judging, should mark each work considered suitable for hanging 1, 2, or 3, the Hanging Committee receiving instructions that the No. 1's have places on the line if possible, or in the case of sculptors, prominent places, the No. 2's above the line, and as many of the No. 3's as possible still further above.

If the second suggestion were adopted the first would be unnecessary.

At present the Council, with great care, selects many hundreds more pictures than can possibly be placed, leaving to the hangers (five in number, but acting singly or in couples in different rooms) the enormous task of selecting works they approve. To perform such a task impartially is an impossibility, the result being that every year some good pictures by painters of repute become "crowded out," while works of doubtful merit are to be seen, as heretofore, occupying conspicuous positions, and at the risk of the occurrence of unpleasant reflections that they are so placed either by chance or favour.

At a conference arranged by the Scottish National Labour Housing Association held at Dundee, Councillor John Wheatley, of Glasgow, put forward a proposition that might be termed Socialistic, but is rather an illustration of what can be done by making the State a co-operative society for financing the nation. The Councillor took Glasgow for an example. There, he said, they would require 4,000 new houses per annum. It needed £250 to build one of the type of houses they desired, which meant that one million pounds were required for the 4,000 houses. With a grant of one million pounds the 4,000 houses would be erected and let at a rent which would meet all charges free of interest. That meant half the rent they would be rented at were interest on capital to be paid. Each house was to repay from its annual rent one-sixtieth part of the £250, so that at the end of sixty years, when the house was done, it would have created a fund of £250 to rebuild it again. Having explained further the purposes of this sinking fund, he said that in the sixty-first year they would have exactly one million pounds coming in from the houses built on this system, and they would require no further contribution from the Government. They would then have rebuilt Glasgow on a new economic basis. Such houses would be bearing no interest. No one would get any profit or interest out of them. The people would be getting houses at half what they hitherto had paid, and the average amount the Government contributed to Glasgow during that period would be only half a million per annum.

They were now accustomed to think in millions, and to rebuild Scotland would only require on an average something like two and a-half millions per annum during that period as a grant from the Government through local authorities—which, compared with the spending of five millions a day on the war, was a very trifling amount. There was the question—Where was the money for housing to come from? Just in the very same way that grants were got from the Government for sanatoriums and for schools, and these grants were given free of interest. He submitted that the sanatoriums were only necessary because the people had not sufficiently good houses to live in. Sanatoriums and schools were simply a part of the housing of the working classes. In conclusion, Mr. Wheatley said that they were performing one of the greatest national works of the moment in trying to get a higher standard of housing. This was a policy that could with advantage be adopted by every local authority in Scotland.

COMPETITION NEWS.

YORK.—The City Council at their last meeting considered the report of the York Town Planning Sub-Committee, which stated that the City Engineer (Mr. F. W. Spurr) submitted a letter from Professor Abercrombie, and his comments on the fifteen competitive schemes submitted to him for adjudication. He recommended that the premiums should be awarded to schemes Nos. 7, 1, and 11 respectively, which, on the opening of the sealed envelopes were found to have been sent in by the following: 1st, Mr. R. Dann, Crawley, Sussex; 2nd, Mr. M. A. Piercy, Warrington; 3rd, Messrs. Noel Stephen & H. O. Burroughs, Liverpool. He also commended scheme No. 12, which was found to be sent in by Messrs. Allen, Thompson & Thorpe, London. The project was really originated by the late Dr. Tempest Anderson, who, much impressed by the necessity of removing congested areas from the city, and the institution of ring-roads, gave £100, to which the Corporation has added £75, making three prizes of £100, £50, and £25 each. Professor Abercrombie's report was adopted by the City Council.

ILLUSTRATIONS.

DESIGN FOR NEW HOUSE AT BURNHAM, BUCKS.

THIS is the first sketch design for a new house at Burnham, Bucks. The house as executed is a formal design of Georgian type. The drawing is by Lieutenant Lodge. The architects are Messrs. Geoffry Lucas & Arthur Lodge.

ST. MICHAEL'S CHURCH, GOLDERS GREEN, SCREENS, &c.

THE church consists of a nave, with north and south aisles, a baptistery with tower and south-west porch, and a chancel and ambulatory with vestries on the south and a chapel on the north. The ambulatory, which is carried up on each side of the chancel and over a part of the choir vestry to form an organ-chamber, with space for augmented choir, is approached by a turret from each side of the chancel. The total length of the church is 138 ft. by 62 ft. wide. Dignity of effect in the interior is provided by carrying up the enclosing arches of the clerestory from the nave floor to the roof, which is

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35 ft. 6 in. to the springing and 42 ft. to the apex. Arches are also provided across the entire length of the nave. Height is provided in the chancel by carrying up the ambulatory as a double arcade and providing a proportion equal to more than double its span. The interior includes a reredos which by its subjects illustrates the "Te Deum." The same hymn of praise inspires the elaborate east window.

In the Lady chapel near by is another east window. This depicts the Incarnation of the Son of God.

The reredos, 21 ft. 6 in. by 20 ft. wide, contains the following: In the centre St. Michael, in the right hand a sword, with the scales in the left with which he is weighing the good and bad souls. Beneath, the Recording Angel with open book on knees, on either side an angel blowing the last trump. Screens are proposed between the chancel and ambulatory, between the chapel and ambulatory, and from the chapel and vestries into the aisles as well as the baptistery at the west end. The chapel is to have a reredos 16 ft. 6 in. high by 8 ft. 6 in. wide, the centre compartment having the figure of a "Salvator Mundi," robed as King and Priest, with an angel on each side robed as a deacon and holding chaplets of olives and boughs of laurels, the three figures being supported on brackets with canopies over. It is hoped to have a pulpit with canopy over, an important feature being required on the north side of the nave as a counterfoil or balance to an overhanging organ on the south side where the lectern stands. The lower part of the pulpit is to include canopied figures representing with the reredos and lectern the seven angels which stand in the presence of God. The carved lectern will be composed of the figure of St. Gabriel supporting the bookboard bearing the sacred monogram with "Coelum et terra transibunt," &c.; another, the Alpha and Omega with "In principio erat verbum," &c.; and the third, a St. Andrew's Cross with "Sic erit verbum quod egredietur"; and at the base of the chancel roof the Hierarchy of Heaven. A rood beam is provided in the chancel arch, with the three figures and emblems of the Passion beneath. The altar ornaments with reredos to be gilded and burnished. It is also hoped to provide in the cornices of both roofs shields with the emblems of the cardinal and theological virtues, the fruits of the Holy Ghost, and other emblems.

The church was consecrated early this year. The builders were Messrs. Jos. Dorey & Co., Ltd., Brentford, Middlesex, and Mr. John T. Lee was the architect.

The altar in chancel shows a festival frontal, with the design of the Seven Fruits of the Spirit embroidered in silk to complete the super frontal already worked by the Guild for the consecration. The completion of the bays of the chancel is shown on the interior and embraces the four Evangelists, with the two Apostles in niches in the arches of the screen, and on the south pier of the chancel arch the figure of St. Michael will be shown to the large interior of the nave; also over the vestry entrance in south aisle the three figures of the "Salvator Mundi," with the two angels vested as deacons, as an alternative treatment to that suggested for the east end of the chapel.

OXFORD COLLEGE SERIES.—UNIVERSITY COLLEGE.

We this week resume our series of photographs of Oxford Colleges with views of the two quads.

According to the British Consul about three-fifths of the cement imported into Ecuador used to come from Germany. The demand is increasing on account of the sanitation work which is in progress in Guayaquil, and also on account of the new municipal building ordinance, which requires the foundations of all new buildings to be constructed of concrete. It is satisfactory to note that the superior quality of barrels used by United Kingdom exporters greatly reduces the percentage of loss in transit. On shipments of cement from other countries the percentage of loss, through employing weak and inferior barrels, often reaches as much as 40 per cent.

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—XVIII.

By Charles T. Ruthen, Licentiate R.I.B.A., M.S.A.

Having spent hours of quiet study within this great Venetian Temple of Worship, and wandered, almost continuously on tip-toe, over its magnificent mosaic pavements, with their strange undulating surfaces, appearing to suggest the swell upon the ocean without the city's walls, or the boisterous sea of life, one eventually arrives at the time for leaving, and is in a few moments again standing in the broad Piazza, still gazing in wonderment at the west front of San Marco with all its indescribable charms.

Again this Byzantine façade attracts one, and many other features than those already described begin to unfold themselves, such as the beauty of its wonderful colours, the complexity and sumptuousness of the large number of magnificent marble shafts which form part of the front, perhaps more than in any other building of its size in the world. Externally and internally this church is adorned with five hundred marble columns, mostly of oriental origin, and with capitals of great beauty and in a great variety of styles.

The wonderful mosaics, of which mention has already been made at some length (it is computed that there exists about 45,800 superficial feet of mosaic work in the various parts of this fabric), are seen again, and appear to constantly change in appearance according to the direction from which they receive the light.

Then the quaint large ogee gables, with figures at the apex of each, very extensively crocketed, added to the Gothic pinnacles, and the cluster of oriental domes, complete one of the most charming pictures imaginable.

Immediately in front of San Marco, Venice, in the Piazza, stand three great flagstaffs, with richly decorated bronze bases or pedestals. These bronze bases (a good view of one appears in an illustration accompanying Article XVI.) are notable examples of castings of the Renaissance period. They were erected in the first part of the fifteenth century, when Leonardo Loredan was Doge, and were the work of Alesandro Leopardi. The banners of Cyprus, Crete, and the Morea, the three great dependencies of Venice, waved proudly at one time upon these flagstaffs; now the standards of the kingdom of Italy are to be seen floating aloft in the breeze.

The Campanile di San Marco standing detached from the church in the south-east angle of the Piazza is perhaps the most prominent landmark of Venice, approached from the mainland or from the sea. This noble structure is square, and rises to a height of 325 feet. The existing campanile was erected in 1905-11 by Piacentini in place of the earlier tower, which fell to the ground on July 14, 1902. The foundations were strengthened and the tower reconstructed as it is seen to-day, an unadorned brick shaft 160 feet high, above which is a bell chamber of Istrian limestone, with an attic ornamented with reliefs of Justice and the Lion of St. Mark. A spire of reinforced concrete covered with copper plates, surmounted by the gilded figure of an angel, crowns this beautiful Renaissance structure.

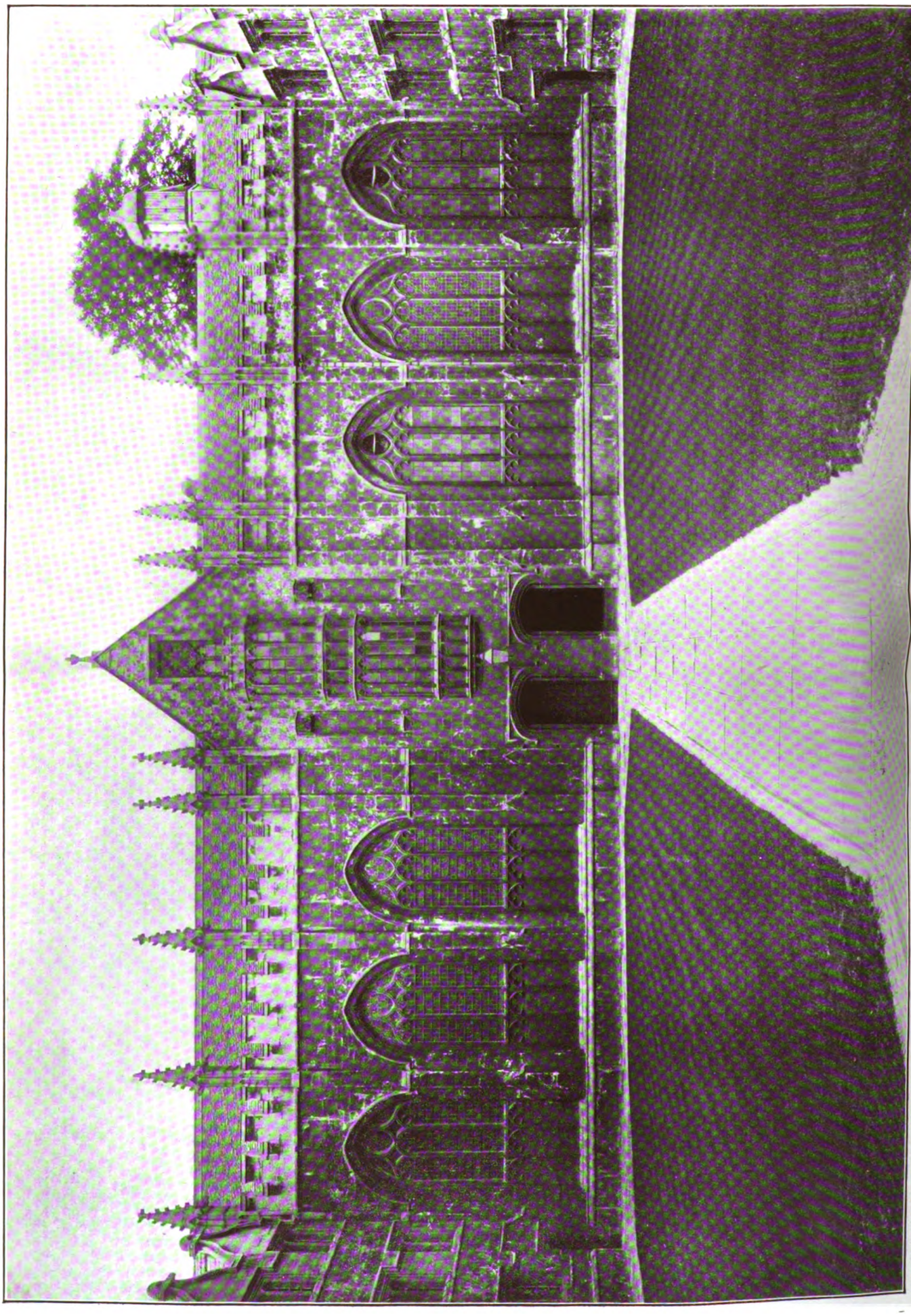
The original campanile was erected about 888 to 900, some say 911, and this was reconstructed in 1329, and it is said was provided with an upper storey by Bartolomeo Buon the Younger after an earthquake in 1512, and for nearly 400 years proudly reared its head as one of the great architectural glories of this city. Some original foundation defect, however, succeeded in bringing to the ground this tower, and in its fall the Loggietta (standing at the foot of the structure), a late-Renaissance portico erected in 1540 by Sansovino, was entirely destroyed. The Loggietta was the rendezvous of the nobility in its early days, and afterwards became a guard-room during the sessions of the Venetian Council.

Turning into the Piazzetta di San Marco, bounded on the west by the library and on the east by the noble façade of the Ducal Palace, one reaches the Molo or

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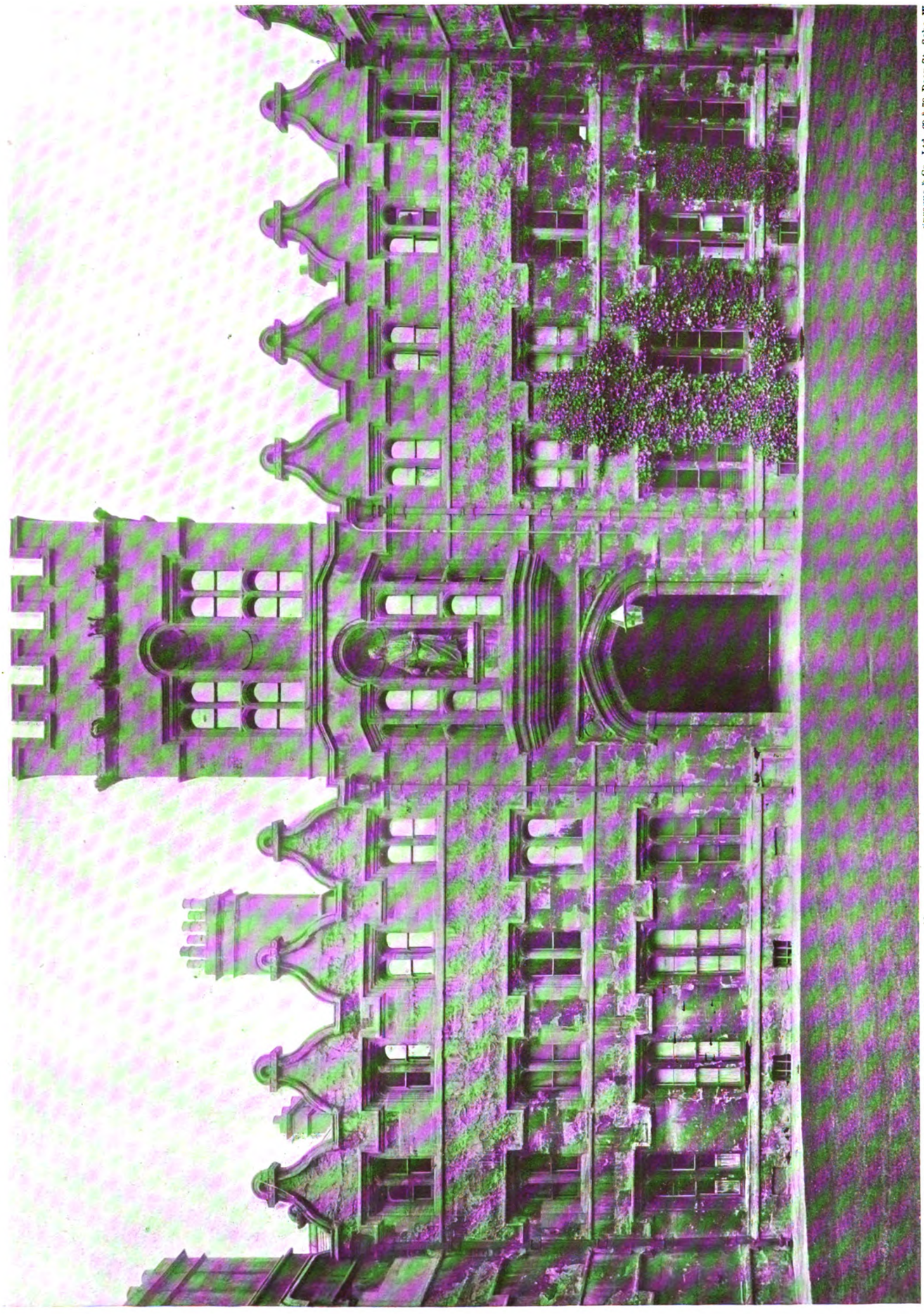


OXFORD COLLEGE SERIES. No. 156.—UNIVERSITY COLLEGE: QUAD.

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OXFORD COLLEGE SERIES. No. 157.—UNIVERSITY COLLEGE: BACK QUAD.

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lagoon front, the principal stand for gondolas, passing on the way theither two granite columns erected in 1180. These columns were brought from Tyre by Doge Domenico Michiel, and form a part of Byzantine Venice. They are of special interest, for each column consists of a single block of granite of size so great that the erection in their present positions presented such enormous difficulties that after their arrival in Venice over half a century was allowed to elapse before the engineering problem was solved. The column to the east bears the Winged Lion of St. Mark, a very excellent piece of work, and the other column a figure on a crocodile of St. Theodore, the patron saint of the ancient Republic, placed in its present position in 1329. The bases and capitals of these two columns are particularly fine specimens of Byzantine-Romanesque sculpture.

Turning to the Palace of the Doges, the principal building of Gothic Venice is inspected. This palace was first founded about 814 close to the ducal church of St. Theodore, was rebuilt after serious conflagrations in 976 and in 1105, and in 1172-78 was considerably altered and restored by Doge Sebastiano Ziani, in the Byzantine-Romanesque style.

The oldest portion of the existing Ducal Palace is the south wing facing the open lagoon, about 77 yards long, fronting the Molo. This was built in 1309-40 (together with a portion of the return west wing) by, it is supposed, Pietro Baseggio, in the Gothic style at this time commencing to invade Venice, and which provided the style for some of the earlier palaces on the Grand Canal. The west wing, 82 yards long, facing the Piazzetta, was built, excepting that portion erected with the south façade, in 1424-38 by Giovanni Buon and his son Bartolomeo Buon the Elder. This latter wing extended from near the south façade at the Molo to the Porta della Carta, and replaced the old Byzantine-Romanesque façade of Ziani's. A fire in 1419 destroyed the old Byzantine palace, and a decree was passed that it should be rebuilt in conformity with the remaining portion of the edifice, and the ruins were thereupon removed and the west wing erected in the Gothic style in 1423, and then the great council chamber was used for the first time.

Such is the history of the building of this Ducal Palace, according to very reliable authorities, and it is possible to trace the Renaissance feeling in the west wing; and in the main portal the transition from the late Gothic to the Renaissance is very distinctly traceable. This Porta della Carta was built between 1438 and 1443 for Doge Franc Foscari by Buon (Giovanni and Bartolomeo), and the same feeling is discernible in the fine corner-tower, the "torricella" in the west facade of the Corte.

The Rio del Palazzo is flanked by the east wing of the palace, begun by Ant. Rizzo in 1484-88, continued by Pietro Lombardi in 1499-1511, and completed by Scarpagnino in 1545-49.

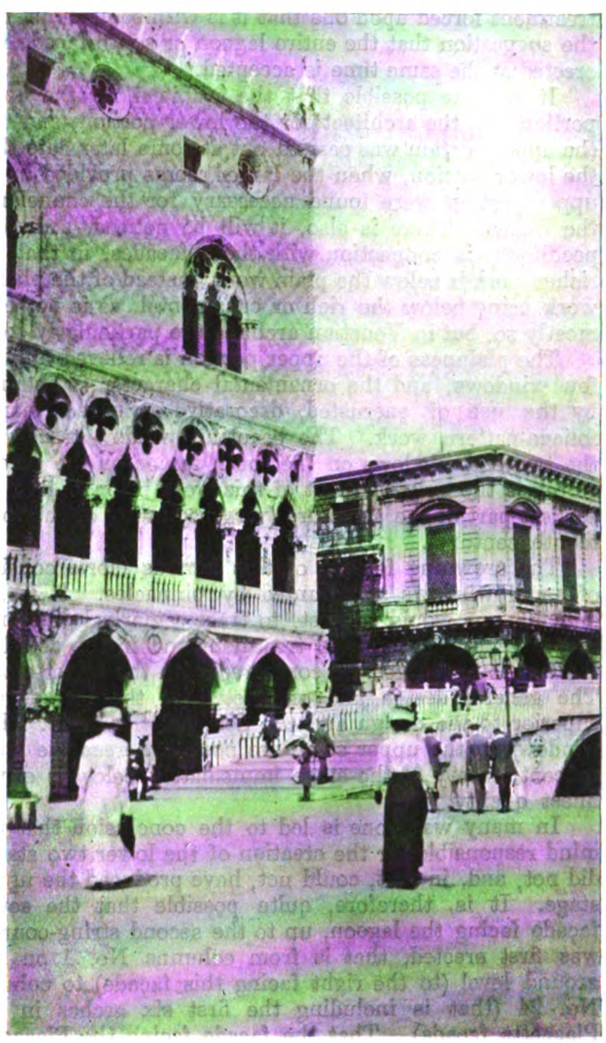
Great damage was caused by fire in 1574 and 1577, and this was repaired by Antonio da Ponte, Palladio, and others.

The study of the exterior of the Ducal Palace is best commenced at the south-east corner, this being the oldest portion of the existing edifice. Approaching from the west, the Ponte della Paglia, which connects the Molo with the Riva degli Schiavoni, one gets a fine view of the façade facing the lagoon, with the criminal prison building on the right side of the Rio del Palazzo.

This (the southern) façade consists of four stages in height, rather than four storeys, although it might be reasonably suggested that there are three stages, the third or upper one being nearly equal to the united height of the two lower stages. If the latter position be accepted, then the upper or third stage is divided into two portions, viz. the plain-faced, large, lower portion and the upper and more elaborate portion.

A study of these façades, particularly on the lagoon and the piazzetta fronts, will reveal an astonishing dissimilarity between the first two stages and the third or upper stage.

The lowest or first stage consists of an arrangement of short dwarfed columns without bases, from which spring simple pointed arches. There is thus formed an arcade which extends round the west façade of the palace. These columns (36 in number in all, upon the south and west façades) are shorter than originally (as much as 20 inches, it is said), owing to the raising of the level of the pavement of the Riva, to the great detriment, as can be imagined, of the general effect. It appears they never had bases; they are circular and have elaborately carved capitals, richly decorated with foliage, &c., all being varied, and are particularly fine, boldly sculptured, and worthy of careful and minute examination.



THE MOLO, VENICE, SHOWING PORTION OF SOUTH FACADE OF DUCAL PALACE, THE PRIGIONI DI SAN MARCO (TO THE RIGHT), AND THE PONTE DELLA PAGLIA.

Within this arcade, sheltered from the scorching rays of the sun or from inclement atmospheric conditions, met the members of the nobility in the days of the Republic.

The illustrations provide an accurate representation of this truly artistic meeting-place, and although to a very small scale, yet the exceptional whiteness of the elaborate portions of the edifice, added to the brilliant clearness of the atmosphere, enables the fine and gorgeously rich detail to stand out with wonderful sharpness.

The intermediate or second stage is again a magnificent arcade or open loggia, the superstructure being supported upon cusped arches (springing from 71 columns in all, upon the south and west façades), with pierced quatrefoils above them. This first-floor arcade, known as La Loggia, can be only described as magnificently

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rich, and was much copied in the palaces subsequently erected upon the Grand Canal for members of the nobility.

This loggia was used largely by the high-placed ladies for viewing the great State processions and ceremonies. The lightness and ornate character of the two lower stages or floors are accentuated by the almost excessive plainness of the upper stage of the structure.

The careful study of the graceful Venetian pointed arched treatment of the lowest stage and the second stage, in fact, all that portion under the second string-course level, will impress one that it would be difficult, if not impossible, to find a better or more truthful specimen of Gothic architecture south of the Alps. Then above this specially fine and delicate piece of work comes the third stage (the second floor), as chilly, bare, and mean in design and execution as the lower portion is warm, rich, and bright. To such a degree is this change of treatment forced upon one that it is with some doubt that the suggestion that the entire lagoon or south façade was erected at the same time is accepted.

It is quite possible that the architect for the upper portion was the architect for the lower portion, and that the upper portion was carried out at some later date than the lower portion, when the larger rooms provided in the upper portion were found necessary for the councils of the Doges. There is also, it will be noticed, a distinct peculiarity in connection with these facades, in that the richer work is below the plain work, instead of the plainer work being below the rich or ornamental, as is not only mostly so, but in Venetian architecture particularly so.

The plainness of the upper portion is relieved only by few windows, and the ornamental character is obtained by the use of encrusted, decorative coloured marble foliage-pattern work. The beautiful window tracery of the two end windows on the south facade on the second storey is the only remnant of this work belonging to the earliest part of the structure (very beginning of the fourteenth century).

The crowning feature of this famous fabric consists of small windows surmounted by pinnacles. It is not difficult, one would suggest, to trace a marked difference in the general design and treatment and in the detail of the two lower stages, as compared with the upper stage. The general design and the detail of the former are superior to the design and the detail of the latter. The windows in the upper stage are poor, whereas the magnificent tracery of the stage immediately below is of the finest quality.

In many ways one is led to the conclusion that the mind responsible for the creation of the lower two stages did not, and, in fact, could not, have produced the upper stage. It is, therefore, quite possible that the south façade facing the lagoon, up to the second string-course, was first erected, that is from columns No. 1 on the ground level (to the right facing this façade) to column No. 24 (that is including the first six arches in the Piazzetta façade). That the façade facing the Piazzetta (the west façade) from columns 25 to 36 was then erected, again up to the second string-course level, and that the whole of the large upper stage was erected at some very much later date, possibly fifty to a hundred years later. In case such a suggestion should be correct then the south façade would be erected in 1309-40, and immediately afterwards the remaining portion of the west façade, and then the upper portion would date from about 1424-38.

This idea, however, would not seem to agree with the decree recorded that after a fire in 1419, "the old Byzantine palace . . . should be rebuilt in conformity with the remaining portion of the edifice," &c.

The Gothic portions of this Ducal Palace were extensively restored in 1873-89. Whatever defects may be found in this certainly beautiful fabric, it is worth all the travelling one has to undertake to examine its charms, its peculiarities, as well as its faults.

This structure is in no little sense original and unique, for although it is looked upon as Gothic, yet there is a very decided and in places very pronounced Byzantine tinge about its lines and in its make-up. A close study of its many points will reveal this to the student.

To proceed to a short examination of the upper stage, a huge window with a very elaborate balcony of carved, pierced, and traceried marble work occupies the central position in the south façade, and generally completes one of the most unique Gothic erections in existence. A statue of "Venice," with sword and scales, stands upon the pinnacle surmounting this balcony; underneath, in three niches, are St. Mark, with Faith and Hope beside her. The four Cardinal Virtues are close by, and underneath at the sides of the window St. George (by Canova) and St. Theodore, the minor patrons.

To be numbered amongst the fine achievements of Lombardic sculpture of the fifteenth century are the high-reliefs over the corner columns on the Molo, "Noah's Transgression" at the south-east angle and "Adam and Eve" at the south-west angle.

The west façade facing the piazzetta is much the same in style and character as the south façade, but it



STANDING UPON THE PONTE DELLA PAGLIA, THE EAST FACADE OF DUCAL PALACE TO THE LEFT, THE PRIGIONI DI SAN MARCO TO THE RIGHT, AND THE BRIDGE OF SIGHS (PONTE DEI SOSPIRI) IN FRONT.

is, as mentioned already (if some records are to be accepted) of more recent date. The first two windows in this façade upon the second floor belong to the Sala del Maggiore Consiglio, and form part of the original Gothic portion, which, as already mentioned, ended at the sixth arch from the south-west corner. Although there is strongly evident a distinct Renaissance feeling in the remaining portion of this façade (still further evidence that the upper portion was erected at a later date), yet it harmonises very well with the earlier Gothic portion.

Returning for a few minutes to the Ponte della Paglia, one, in standing upon this picturesque bridge facing

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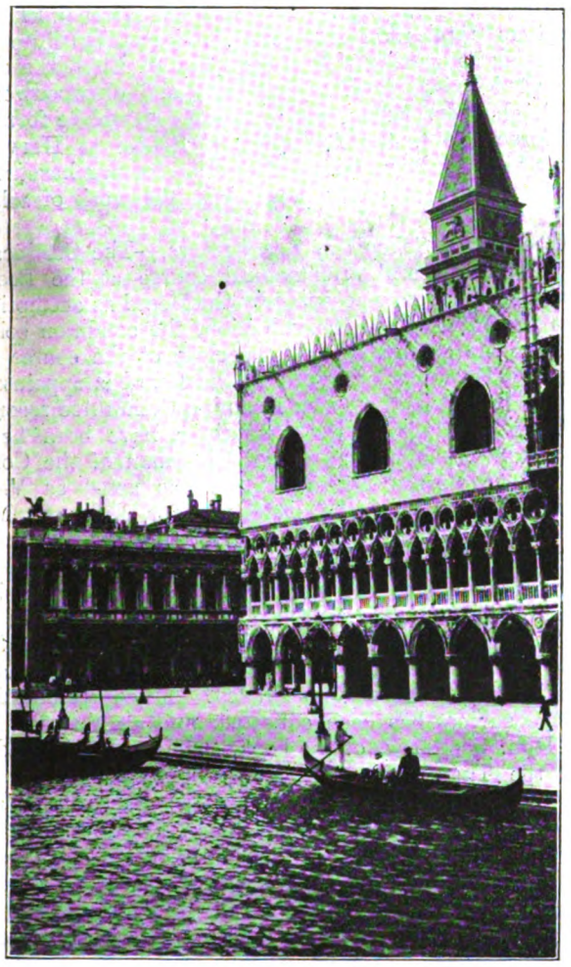
north, obtains a fine view of the sixteenth-century Bridge of Sighs (Ponte dei Sospiri), with the late-Renaissance east façade of the Ducal Palace, of plain brickwork uncovered with marble relieved only by fine string-courses and beautiful windows on the left hand, and on the right hand the Carceri, or Prigioni di San Marco (Criminal Prison).

The famous, but much overrated, bridge just mentioned, spaning the Rio del Palazzo and connecting the Ducal Palace with the Prison House, was constructed by Antonio da Ponte about 1590.

Retracing one's steps past the south and west façades of the Ducal Palace, the Porta della Carta is reached, a truly magnificent portal, giving access to the Scala dei Giganti, and the interior Corte (court-yard). There are again distinct Renaissance tendencies in the particularly fine late-Gothic entrance doorway erected by Bartolomeo Buon in 1438-43. There is much fine sculpture in this piece of work, and as an example of the transition from the Gothic to the Renaissance it is worth careful study.

Entering the Corte of the palace, one has the opportunity of studying the mixture of Gothic and Renaissance. The south and west sides, the former the older portion of the palace, and the latter the reputed later Gothic extension, are in brick in the upper storey. The two lower floors of these two sides have been altered to harmonise with the later Renaissance part of the structure.

The east façade, being the Corte front of the façade facing the Rio del Palazzo, is entirely covered with marble, is very ornate, and represents an expensive

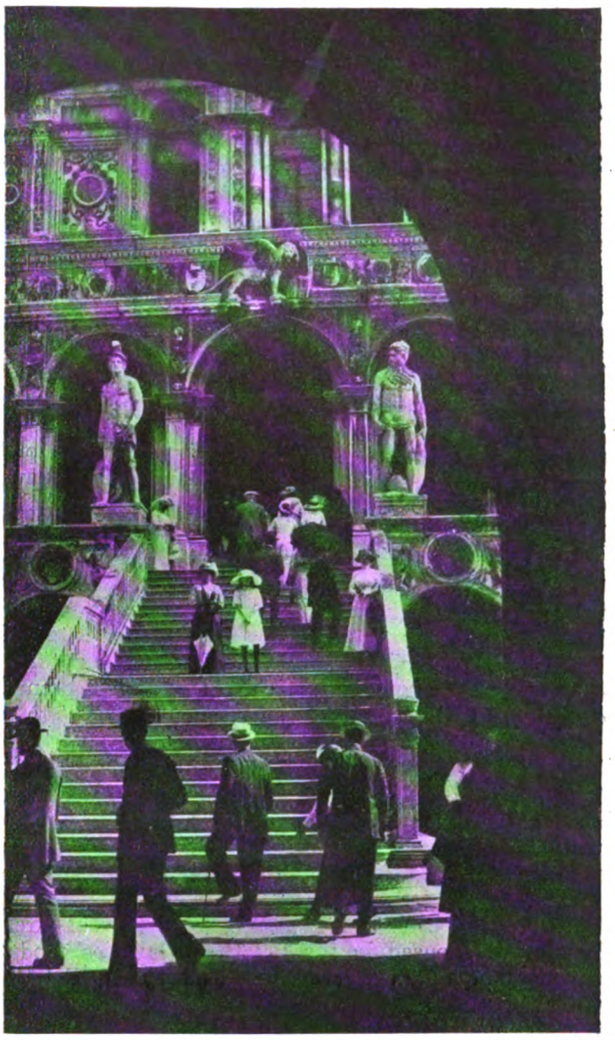


THE MOLO, VENICE, SHOWING PART OF SOUTH FACADE OF DUCAL PALACE, GRANITE COLUMN BEARING THE WINGED LION OF ST. MARK, AND PART OF THE FAMOUS LIBRERIA VECCHIA.

specimen of Venetian Renaissance. This side of the Corte was erected by Rizzo in the late part of the fifteenth century.

In the centre of the Corte are two well-heads in bronze of Renaissance workmanship dated 1556 and 1559. A very pretty little example of the Renaissance style erected in 1520 by Bergamasco, may be inspected in the little court at the north end of this Corte, north of the Scala dei Giganti.

It is difficult to say that, among so many features of note, any one may be selected for special attention, but



VIEW OF THE SCALA DEI GIGANTI AND THE MAIN ENTRANCE TO THE DUCAL PALACE, VENICE, FROM WITHIN THE PORTA DELLA CARTA.

perhaps the great staircase of which a good view is given in one of the illustrations, is worthy of extra special study.

The Scala dei Giganti, as it is called, is a gorgeously ornamented flight of steps, leading from the Porta della Carta to the first floor of the Ducal Palace. The name is derived from the colossal Renaissance statues at the top of the steps, representing Mars and Neptune, and denoting the naval and military supremacy of Venice. These steps were erected by Antonio Rizzo in 1584, and were used by the nobility for entrance to the palace, and on the top landing the Doges were crowned in the later days of the Republic.

The giant statues were by Jacopo Sansovino, 1554. St. Mark's Lion will also be noticed between the giant statues, over the main entrance arch.

(To be continued.)

THE Secretary of the Royal Academy states that the president and council have purchased the following works under the terms of the Chantrey bequest:—"The Poulterer's Shop" (oil painting), by Frank Brangwyn, A.R.A.; "The Kiss" (marble statue), by Hamo Thornycroft, R.A.; "The Lady with the Amethyst" (oil painting), by Charles Shannon, A.R.A.

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ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE Report of the Council for the official year 1915-16 was presented at the Annual Meeting last Monday, and states that a grant of £50 to the Society of Dilettanti was the result of an undertaking entered into before the war to enable the Society to publish their new volume of "Antiquities of Ionia."

The Royal Gold Medal was awarded to Mr. Frank Darling, of Toronto. Mr. Darling was, unfortunately, prevented from being present at the Royal Gold Medal meeting, but the Medal was received on his behalf by Sir George Perley, High Commissioner for Canada.

It has been decided to award the Medal this year to Sir R. Rowand Anderson, LL.D., in recognition of the merit of his executed work, his services to architectural education, and his high character and lofty ideals in the art of architecture. His Majesty the King has graciously signified his approval of the award, and the Medal will be presented to Sir Rowand Anderson at the General Meeting on June 19.

The work of the Royal Institute has, of necessity, been seriously affected by the war. The programme of sessional papers has been suspended and only business of a routine and uncontroversial nature has been transacted at the General Meetings. The prize competitions for the year have again been postponed, and the examinations which in the ordinary course would have been held in November 1916 have been cancelled.

The Record of Honour which has been compiled by the Royal Institute now contains the names of some 2,250 architects who are serving in the Forces. Included in this number are 57 Fellows, 426 Associates, 228 Licentiates, and 272 Students of the Royal Institute.

The most important work of the year has been that done by the Architects' War Committee and its two subsidiary Committees. The Architects' Benevolent Society has rendered the most valuable assistance in the administration of the funds subscribed for the relief of architects, and the Civic Surveys which have been set on foot with the assistance of the Royal Institute have provided paid employment for a number of members of the profession whose practices have been stopped by the war. The most important of these Surveys—that of Greater London—is housed in the R.I.B.A. Galleries, and the expenses of all the Surveys are paid by the R.I.B.A., while the salaries of the workers are paid by grants from the National Relief Fund.

The consideration of the Report of the Official Architectural Committee, referred to in the last Annual Report, has been again deferred for twelve months.

The usual statement appended to this Report shows that the finances of the Royal Institute have met the strain of war conditions with great success.

Most of the architectural students are serving in the Forces and there is, consequently, a heavy fall in the receipts from examination fees. The subscriptions of all members and Licentiates serving with the Forces are also remitted. In 1915 this measure cost the Institute some £700, and in 1916 it will probably cost well over £900.

In spite of these and other losses there was a realised surplus of £719, in place of an anticipated deficit of £260 in the financial year ending on December 31, 1915, and a moderate surplus is also anticipated in the current year. It will be observed that a sum of £290 was received from the Henry Jarvis Trust in aid of the educational work of the Royal Institute. The warmest thanks of the Council are due to the Finance and House Committee, whose careful management has been responsible for such satisfactory results.

The Report of the Board of Architectural Education states that the Board have held nine meetings since the issue of the last Annual Report. At the first meeting Mr. John Slater was elected Chairman; Mr. Lewis Solomon and Mr. Paul Waterhouse, Vice-Chairmen; Mr. Gerald C. Horsley, Honorary Secretary.

Committees.—The following Committees have met and reported from time to time on the matters referred to them:—Testimonies of Study, Examinations, Exemptions, Students' Drawings for America.

Problems in Design.—During the year 104 designs have been received and adjudicated on, and of these sixty-six have been approved. The designs have been exhibited, some at the Gallery of the Royal Institute, and others, by the courtesy of the Council of the Architectural Association, at the rooms of that body.

The Examinations.—The Board have conducted the Preliminary, Intermediate, Final and Special Examinations as usual, and the results, as reported to the Council, have been published.

The new scheme of examinations referred to in the last Report of the Board has been postponed until after the war; but the Council on the recommendation of the Board, have decided to discontinue the Preliminary Examination for the future.

Candidates for registration as Probationers will be required to submit any of the Certificates mentioned in the Kalendar or such other satisfactory evidence of their education as may be approved by the Board. The Board will continue to examine in the subjects of geometrical drawing and the elements of perspective, and in free-hand drawing, those candidates who are unable to produce satisfactory drawings showing their knowledge of any of these subjects.

The Council have also decided to hold the Intermediate and Final Examinations once only this year, viz., in June.

The American Institute of Architects and English Architectural Drawings.—The Council referred to the Board an application from the American Institute of Architects suggesting that a collection of English architectural drawings both of buildings and of woodwork, metal, glass decoration, and furniture, should be formed and forwarded to the Architectural School at Harvard with a view to their making a selection for purchase, and a Sub-Committee is now engaged in the work of selection.

Recognised Schools of Architecture.—The Certificate of the three years' architectural course at the Leeds School of Art is now accepted by the Board as exempting from the Intermediate Examination, the condition being that for the examination at the close of the course an External Examiner approved by the Board is appointed.

The Report of the Town Planning Committee records that six meetings of the Committee have been held. Sir Aston Webb was re-elected Chairman of the Committee. Professor Beresford Pite has acted as Vice-Chairman, and, on the departure for India of Mr. H. V. Lanchester, Mr. W. R. Davidge was appointed Honorary Secretary.

The subject of the suggested Thames Barrage between Tilbury and Gravesend, originally proposed in 1903, came before the Committee as the result of a letter to the Institute from Lord Desborough, Chairman of the Thames Conservancy. Much information on the subject has been collected, and an abstract, by the Hon. Secretary, of the book, "The Port of London and the Thames Barrage," has been printed in the Journal for the information of members generally. The subject is being further considered by the Committee.

The volume of Transactions of the R.I.B.A. Town Planning Conference, 1910, contains a large amount of valuable information, and in order that this might be generally available, the Council, on the Committee's recommendation, have agreed to the price of the volume being reduced to 10*s.* 6*d.* (the original price being 24*s.*). A limited number of copies of the Transactions of the Conference are still available at this reduced figure.

A circular letter to architects and allied societies has been prepared and issued, and a draft circular to Local Authorities contemplating town-planning and improvement schemes has been approved by the Council.

The Institute has been represented on each of the six Sectional Conferences, held at the Local Govern-

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ment Board, on the subject of Arterial Roads in Greater London. A draft resolution for submission to the final Conference has been prepared and approved by a meeting of the professional and other societies represented at the L.G.B. Conferences. The resolution will be proposed by Sir Aston Webb at the final Conference in due course.

A letter has also been addressed to the London County Council, pointing out the necessity of reserving the routes of the arterial roads as approved by the Conferences.

A proposal submitted to Parliament by the S.E. & C. Railway Company for the construction of steel arched cantilevers and additional masonry piers under the eastern portion of the Charing Cross Railway Bridge, estimated to cost £150,000, has been considered by the Committee, and on the Committee's recommendation the Council of the Institute approached the London County Council with the suggestion that the basis of their opposition should, if possible, be broadened to avoid so large an expenditure on the present unsatisfactory structure, especially in view of the possibility of the eventual removal of the station to the south side and the need for a road bridge at this point. The L.C.C., while sympathising with the views of the Institute on the matter, did not, however, see their way to take the suggested action. A joint letter, signed by the President and Sir Aston Webb, as Chairman of the Council of the London Society, was subsequently sent to the "Times" on the subject of the Charing Cross Railway Bridge.

The Bill is now being considered by a Committee of the House of Lords. By a resolution of that House, moved by Lord Plymouth, it is an instruction to the House of Lords Committee to hear evidence from the R.I.B.A. and the London Society, and efforts are being made to secure proper consideration to the whole question of road communication across the Thames at Charing Cross.

On the recommendation of the Committee, the Council have decided to obtain periodically a list of all private Bills, such as the Charing Cross Railway Bridge Bill to afford the Institute an opportunity of investigating the probable effect of the proposals embodied in them.

A number of town-planning schemes have been prepared by Local Authorities during the year, and the Committee, in conjunction with our allied societies, are arranging as far as possible to be represented at the public inquiries conducted by the Local Government Board.

The Report of the Art Standing Committee states that since the issue of the last report the Art Standing Committee have held eight meetings. Mr. Edward Warren, F.S.A., was elected Chairman, Mr. H. H. Statham, Vice-Chairman, and Mr. Harry Redfern and Mr. H. P. Burke Downing, Honorary Secretaries of the Committee.

Mr. Warren has now been appointed administrator of a large military hospital at Corfu, and Mr. Redfern is engaged upon war work for the Government, necessitating his temporary residence in Scotland. Mr. L. Rome Guthrie, Mr. Wyatt Papworth, and Mr. Philip E. Webb have joined various branches of the fighting forces. The war has thus claimed many members of the Committee, and, on the other hand, has doubtless reduced the number of projects which might in the ordinary course come under their consideration. As to some matters, moreover, which in normal times might have engaged the attention of the Committee, it has been felt that serious consideration could not be given to them with the expectation of any useful result during the time of war.

Of matters under consideration when the last report was made, the proposal to do away with the picturesque wooden bridge over the Thames at Goring, and to substitute one of ferro-concrete construction, need no longer occupy the attention of the Committee. The project has been abandoned owing to the Treasury declining to sanction the cost of rebuilding, and the bridge will be merely repaired.

The report of the Committee containing various suggestions for the amendment of the London Building Acts was presented to the Council in June last, and by them forwarded to the Practice and Science Standing Committees. The Science Committee have made some suggestions, but the consideration of these has been deferred by the Council until the report of the Practice Committee has also been received.

A good deal of attention has been given by the Committee to the very prevalent defacement of London by advertisements, sky-signs, &c., with the result that the Council have been in communication with the London County Council, urging upon them the promotion of legislation to strengthen the control of street advertisements. Though the London County Council rightly consider that the subject is such as could not be dealt with during the war, it is hoped that the views which the Committee have formulated may prove useful in the future.

Against the project to demolish the Tolbooth Steeple, Glasgow, and to re-erect it between London Street and Gallow Gate as a part of the Glasgow Cross Improvement Scheme, a strong representation was made by the Glasgow Institute of Architects, and this Committee, after examining the proposal, took steps to support that representation and a deputation to the Office of Works for which the Glasgow Institute were arranging, but action became unnecessary owing to the abandonment for the time of the proposal. It is satisfactory to know that the Tolbooth Steeple for the present is undisturbed. The Committee will, however, continue to watch this scheme.

An interesting suggestion for the architectural treatment of the Post Office site and streets adjoining was submitted to the Committee at a preliminary stage by Mr. H. H. Statham, but it is unnecessary to deal with the proposal here as Mr. Statham intends to publish it in the Journal when more developed.

Various other matters have been under the consideration of the Committee; but, owing to the general postponement of all building schemes, no important action has in any case been necessary during the Session.

The Literature Standing Committee report that since their election in June 1915 seven meetings have been held, making nine meetings altogether since the issue of the last Report. Mr. C. Harrison Townsend was elected Chairman, Mr. C. E. Sayer, Vice-Chairman, and Messrs. Charles Spooner and Martin Shaw Briggs, Honorary Secretaries.

In the Committee's last Report reference was made to the advisability of compiling an index of architectural works which have been destroyed in Belgium during the war. A Sub-Committee was formed, consisting of the Chairman, Mr. Harrison Townsend, Messrs. Arthur Stratton, Charles Spooner, Walter Millard, the Librarian, and Mr. Martin Shaw Briggs acting as Hon. Secretary. In addition to the compilation of the index, it was decided to form a collection of drawings, photographs, and prints to be preserved in the Library of the Institute. With this object in view a letter was drawn up and issued in the Institute Journal, the "Times," and other influential newspapers, soliciting gifts for the collection. Numerous original drawings, photographs, &c., were received from various contributors, including Sir Ernest George, Mr. William Woodward, Mr. Walter Millard, Mr. Halsey Ricardo, Mr. C. Wontner Smith, Mr. Ernest Swain, Mrs. Vaughan, Miss Fellows, Miss Aitchison, and Mr. W. Hilton Nash. The collection which has so far thus been formed is now available for reference.

On instructions from the Committee the Librarian has had the most valuable drawings and editions removed to the basement strong-room for greater safety during the war.

The "Journal" and "Kalendar" Committee have had before them certain suggestions of the Council with

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regard to modifications in the "Journal." The Report which this Committee submitted was approved, and the recommendations forwarded to the Council.

The Committee is greatly indebted to its Chairman, Mr. C. Harrison Townsend, for the presentation of some 150 photographs of mosaic work in Italy, Sicily, and the Holy Land.

With a view to supplementing the Institute collection of drawings by past architects of distinction, it has been possible to obtain through the good offices of the President, Mr. Halsey Ricardo, Mr. Gerald Horsley, and Mr. R. A. Briggs, donations of a large number of valuable drawings by Norman Shaw, William Burges, G. E. Street, Eden Nesfield, and Philip Webb. Exhibitions of these are being held from time to time in the East Gallery.

The Committee decided that, having regard to the need of the utmost economy during the war, the purchase of books should be restricted as far as possible.

Among the books purchased or presented during the year may be mentioned: Cust's "History of the Society of Dilettanti," Byne and Stapley's "Rejeria of the Spanish Renaissance," Audsley's "Practical Decorator and Ornamentist," Baldwin Brown's "Arts in Early England" (vols. 3 and 4), Briseux's "Architecture Moderne, &c.," Lomazzo's "Trattato dell' arte della pittura, scoltura et architettura," Thomas's "Original Designs in Architecture, &c.," Adams' "Mont-Saint-Michel and Chartres," Moreau-Nélaton's "Eglises de Chez Nous," Tipping's "Grinling Gibbons and the Woodwork of his Age," E. R. and J. Pennell's "Lithography and Lithographers," Weaver's "Memorials and Monuments, &c.," Tallis's "London Street Views," Gardner's "French Sculpture of the Thirteenth Century, &c.," Society of Dilettanti's "Antiquities of Ionia" (Part the Fifth), Delstanche's "The Little Towns of Flanders," Cram's "Heart of Europe," Clapham's "Lesnes Abbey," Forestier and Omond's "Belgium," Geddes' "Cities in Evolution," Du Cerceau's "Leçons de Perspective Positive," Balcarres' "Evolution of Italian Sculpture," Cadbury's "Town Planning," Rivington's "Notes on Building Construction" (new ed.), March Phillipps' "Form and Colour."

The Report of the Practice Standing Committee states that nine meetings have been held since the date of the last report. The officers elected at the commencement of the session were:—Mr. Max Clarke, Chairman; Mr. Edward Greenop, Vice-Chairman; Messrs. Matt. Garbutt and Alan E. Munby, Honorary Secretaries.

The Committee have had before them a large number of matters, of which the following are among the most important:—

Experts' Services and Architects' Charges in relation thereto.—Questions having been raised as to the position of the architect and his payment in connection with the employment of expert engineers or other specialists to advise upon special matters or to design details, as in the case of ferro-concrete structures or those consisting largely of metal, or in the case of large electric or heating installations, the Committee have appointed a sub-committee which is considering the whole question.

Notes on Dilapidations.—The revision of the "Institute Handbook on Dilapidations" has now been completed, and the draft submitted to the Council with a recommendation that a new edition be issued.

Special Sub-Committees.—The Professional Conduct Sub-Committee and the Schedule of Charges Sub-Committee were reappointed at the meeting in July 1915. The former have held several meetings, but the latter have not yet had occasion to assemble. In connection with the Professional Conduct Sub-Committee, and with certain other Sub-Committees, the Committee, while congratulating Messrs. Edwin Gunn and Horace W. Cubitt upon their patriotic action in joining His Majesty's Forces, have to regret the loss of the valuable secretarial assistance of those gentlemen, which has been the more felt because of the constant increase of the Committee's work and the number of cases which it is desirable to consider by means of sub-committees.

Professional Conduct, &c.—At the request of the Council, the Committee considered and reported upon the custom of architects entering the witness-box to disparage the work and belittle the claim to payment of brother architects who were unfortunately compelled to sue for their fees. As a result of the Committee's report, the Council have added to the paragraphs upon Professional Conduct, &c., published in the "Kalendar," the following:—"That in the opinion of the Council, the Royal Institute having adopted a Scale of Professional Charges, it becomes the duty of members, when giving advice relating thereto, not to weaken the value of the Scale."

Professional Advertising.—The Committee have had before them several complaints as to advertising by members, and would like to draw general attention to the Council's opinion, published upon page 70 of the "Kalendar," that advertisement by an architect is a contravention of By-law 24.

Professional Day.—The question having been raised as to the number of hours which should be considered to constitute a professional "day," as the term "day" is employed in the Schedule of Charges, the Committee thought the matter of sufficient importance to justify direct inquiry by the Council, who, in the "Journal" of July 31, 1915, invited communications from members upon the point, and also directed inquiry to be made as to the views of allied societies and the practice of kindred institutions. Up to the present a decision has not been arrived at.

Appointment of Arbitrator.—It having been suggested that it would be useful to publish a Form of Appointment of an Arbitrator applicable to disputes not coming under the R.I.B.A. Conditions of Contract, the Committee prepared a draft which has been submitted to the Council and is still under consideration.

Personal Matters.—A considerable amount of time has been occupied by matters of such a personal nature as to render any publication undesirable.

Members' Queries.—The number of inquiries upon matters of professional practice has again been large, and many questions have also been propounded as to difficulties arising in consequence of the war. Some of these latter have turned upon purely legal considerations, as to which the Committee are, of course, unable to express any authoritative opinion. The Committee have also occasionally been obliged to refrain from expressing opinions on the ground that the subjects of inquiry have been, or have been likely to come, before the Courts. The Committee would point out that it is their established practice to refrain from expressing their views under such conditions, as well as when they have before them only *ex-parte* statements.

The Report of the Science Standing Committee states that since the date of their last Report nine meetings of the Committee have been held, with an average attendance of ten. Officers for the current session were elected as follows:—Chairman, Mr. E. W. M. Wonnacott; vice-chairman, Mr. Geo. Leonard Elkington; hon. secretaries, Mr. Osborn C. Hills and Mr. A. O. Collard.

In November Mr. Elkington resigned the vice-chairmanship owing to his having enlisted, and Mr. Bernard Dicksee was elected in his stead. Subsequently, Mr. Wonnacott having ceased to be a member of the Institute, Mr. Dicksee was in January elected chairman, and Mr. W. E. Vernon Crompton vice-chairman.

Westminster Hall Roof.—No further visit has been paid, as Mr. Baines, M.V.O., wrote that the urgent war services which have engaged the attention of his department have delayed the work to the Hall, and suggesting that a further visit be deferred until some of the reinforcement is actually fixed.

Air Raids and Damage by Enemy Bombs.—The Committee are taking steps to collect such information as is possible of the effect of enemy bombs on buildings and the resistance of the various materials employed in the structures, and have sought the co-operation of the District Surveyors' Association. It is, however, anticipated

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that there will be considerable difficulty in obtaining useful and reliable data and nothing can be published at present.

Research Council of the Board of Education.—The Committee's attention was drawn to a paragraph in the Press announcing the proposed formation by the Privy Council of a Research Council. The Committee, with the warm approval of the President, wrote to Sir Amherst Selby-Bigge, and ultimately, on the President's suggestion, it was arranged that some of our members should discuss the subject with Sir William McCormick, Chairman of the Advisory Committee of the Privy Council. The Chairman and Messrs. F. R. Farrow, Digby Solomon, Vernon Crompton, Alan E. Munby, and H. D. Searles Wood (the two latter being co-opted by the Committee) were duly selected. Among the subjects suggested for investigation are:—The extended Use of Colonial Timbers in this country, Dry Rot, Corrosion of Metal Surfaces, and Improvements in the Manufacture of Floor Lights. The Sub-Committee have held seven meetings and have had interviews with the Advisory Council, the Imperial Institute, the Institute of Metals, and the Iron and Steel Institute.

Dry Rot in Timber.—This subject has been much under discussion, and a draft for a revised leaflet was under consideration by the Committee dealing very fully with the subject in respect to (1) the disease generally; (2) its introduction into buildings; (3) conditions favourable to growth; (4) suggested safeguards in new buildings; (5) eradication in old buildings; and (6) list of publications on the subject. Visits were made to Kew Gardens Library and various authorities consulted, but the Committee regretted to find that research work in the special investigation of this disease does not appear to have been carried far. The Committee, therefore, welcomed the possible opportunity to get the matter taken up by the Research Council of the Privy Council as outlined in the previous paragraph.

Metropolitan Water Board Regulations.—On the suggestion of the Committee copies of the correspondence between the Institute and the Metropolitan Water Board (published in the "Journal," pp. 69 and 70) have been sent to Mr. Thomas McIntyre, as representative of the trades interested, to the Editor of the "Master Builders' Handbook," and to the President of the Board of Trade.

Prohibition of the Importation of Building Materials.—The Committee drew the Council's attention to the proposed prohibition of the importation of building materials, and in view of the effect such prohibition would have on the building trade, suggested that steps be taken to limit such prohibition as far as possible, having full regard to the military needs of the country.

London County Council (General Powers) Act, 1909, Part IV.—The Council of the Institute referred to the Committee a letter from the District Surveyors' Association suggesting a conference of representatives of the Institute and others to agree certain points of detail concerning which there appears to be considerable divergence of opinion and practice in reference to this Act. The Council desired the Committee to appoint three representatives, and Messrs. F. R. Farrow, W. E. Vernon Crompton, and F. N. Jackson were duly appointed. The Conference has had several meetings and will make its report in due course.

Test of Building Stones.—The Sub-Committee appointed made a further inspection of the stones undergoing the weathering test at the Geological Museum, and in consequence of its inspection certain suggestions were made relative to the discolouration of the stones in contact with the metal supports and the prevention of chemical action at such points of contact.

The London Building Acts.—Several meetings were devoted to consideration of the Art Standing Committee's suggested amendments of the London Building Acts. Several alterations were made by the Committee, who were in agreement with the main objects sought.

Defective Roofing Tiles.—A Report on this subject was received from the Sub-Committee, visits to tile manufactories were arranged to take place in July, and certain old tiles were examined. Owing, however, to difficulties due to the war visits have had to be postponed and nothing further has been done.

Construction of Belfries and Effect of Vibration on Buildings.—The Belfries and Vibration Sub-Committee early in the year completed its inquiry after paying several visits to various works and buildings, and is now in a position to prepare a Paper to be read at some future ordinary general meeting.

THE ARCHITECTURAL ASSOCIATION.

AN ordinary general meeting of the Architectural Association was held at No. 37 Great Smith Street, Westminster, S.W., on Monday, May 1, at 4.30 P.M. Mr. H. Austen Hall (President) in the chair.

The minutes of the previous meeting were read and confirmed.

The President proposed a vote of sympathy to the relatives of members of the Association who have fallen in the war since the last meeting, Messrs. J. C. Bucknill, Adrian T. Hardman, and G. M. Mackenzie. The motion was carried in silence.

The following gentlemen were elected members: Mr. Arthur Davis, Mr. E. J. Armstrong (19th Batt. Middlesex Regiment).

The President announced the following nominations of candidates for the House List for session 1916-17, and as no further nominations were forthcoming, they were declared elected:—

President.—A. G. R. Mackenzie.
Vice-Presidents.—H. M. Fletcher, Stanley Hamp.
Hon. Treasurer.—F. Winton Newman.
Hon. Editor "A.A. Journal."—F. C. Eden.
Hon. Librarian.—V. T. Hodgson.
Hon. Secretary.—Ralph Knott.
Ordinary Members of Council.—Past President: H. Austen Hall, Detmar Blow, Alfred Cox, H. Farquharson, E. Stanley Hall, E. Brantwood Maufe, W. G. Newton, W. J. Palmer-Jones, J. Alan Slater, T. Tyrwhitt, Philip E. Webb.

On the motion of the President, a vote of thanks was passed to the retiring members of the Council, Messrs. C. C. Brewer and Maurice E. Webb.

The meeting then terminated.

THE OLD GRAMMAR SCHOOL, HULL.

IN a communication dated May 1 to the "Yorkshire Post," Mr. John Bilson, F.S.A., F.R.I.B.A., gives the following particulars concerning the narrow escape from destruction of the above building. Mr. Bilson says:

The idea that the existence of this venerable historic building was threatened by its responsible guardians has aroused such widespread interest in and beyond the city that it may be well to record precisely what has happened.

The property was acquired by the authorities of Holy Trinity Church by means of donations given for the preservation of the building. This fact is clearly proved by the appeal issued by the Vicar, churchwardens, and Church Council in November 1882, and by the list of donations issued with the appeal. One of the members of the Church Council who signed the appeal writes me that it "certainly meant that the object of the subscriptions was to ensure the preservation of this fine old building." The same note of preservation was dominant at the opening ceremony on December 11, 1883, when a resolution, moved by the Mayor and seconded by the Sheriff, expressed satisfaction that one of the most interesting historical monuments of Hull had been preserved and restored, and the Archbishop of York, in opening

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THE DOLPHIN INN, GUILDFORD.—NORTH STREET FRONTAGE.

the building, commended the Vicar for preserving it "for the benefit and use of the people, and, at the same time, as an ornament to the town for ever."

The owners of the property are, therefore, under a moral obligation to ensure the preservation of the building, their acquisition of which was only made possible by funds given with this object.

The ownership of the property is vested in trustees, the body now consisting of one of the original trustees, two trustees of comparatively recent appointment, and the Vicar. In March last, one of the trustees made a written offer to sell the property for a named sum, without any condition as to its preservation, to a certain firm who could only have utilised the site effectively by destroying the building. The offer was made on behalf of the Vicar and churchwardens, who do not own the property.

On April 17 the Secretary of the Yorkshire Archæological Society asked for an undertaking that nothing should be done to imperil the preservation of the building, and in reply he was told that the declaration of trusts upon which the property is held do not mention the permanent preservation of the building. At the vestry meeting on April 25 the Vicar is reported to have said that "the trustees were taking such steps as were necessary under the terms of their trust deed." I do not know whether it is claimed that, because the authorities of Holy Trinity, six years after they had acquired the property by funds given for the preservation of the building, vested it in trustees by a deed which recited the Church uses, but omitted any reference to preservation, they are, therefore, under no obligation to carry out the conditions upon which their appeal of 1882 was based; though it is difficult to account for the offer of sale on any other supposition. Fortunately, this view of their obligation is not shared by all the trustees, and it is possible that the abandonment of the idea of sale may have been due to this opposite view, supported as it was by the protests of societies whose care it is to safeguard our ancient monuments, and by very clearly expressed public opinion.

We now learn that it has been decided to continue the use of the building for parochial purposes, so that it is doubtless safe for the present. When the times are more favourable for considering questions of this kind, it may be necessary to take steps to prevent the recurrence of what has recently happened. Meanwhile we fortunately have an Ancient Monuments Act.

DEMOLITION OF A GUILDFORD LANDMARK.

EASTER week saw the housebreakers commence operations on the picturesque old "Dolphin Inn," at Guildford, on whose site will be erected a garage that is quite superfluous in that neighbourhood, as the old Inn's yard



THE DOLPHIN INN, GUILDFORD.—CHERTSEY STREET FRONTAGE.

was entirely used by vehicles drawn by horses, on market days, and by carriers' vans from and to neighbouring villages, and there is a garage a hundred yards down the

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road and three in Upper High Street—a two minutes' run. The Town Council, a few months ago, when passing plans for the new "Dolphin" (abutting on the old one), sanctioned the garage, the plan showing, for the new property, the putting back of the building-line by a foot or two.

The Surrey Archæological Society were not informed of the owners', nor of the Council's, intentions in the matter until the plans had been virtually "rushed" before the Council and approved by that body—and then only through the report in the local Press—thus giving no fair chance of saving this quaint bit of Old Guildford.

The steps taken by the Society for the Preservation of Ancient Buildings to rescue it were unfortunately foredoomed to defeat, and the petition in favour of its preservation, numerously signed, was ignored by the Council—rather contemptuously—though the owners were willing to let the Inn remain if the Council could have been persuaded to quash its hasty decision.

A NEW HOUSING POLICY.

(Continued from last week.)

The following Memorandum is communicated by Mr. Councillor T. R. Marr (Manchester):—

Memorandum on Compounding for Rates.—Under the present law, rates may be payable by owners instead of occupiers under a great variety of conditions. The following table shows the latitude allowed (apart from local statutes):—

Nature of Hereditament.	How owner becomes liable.	Whether rates payable if hereditament unoccupied.	Commission allowed to Owner.
Poor Rates and Borough Rates.			
1. "Tenement house," *i.e.*, house entirely let off in tenements not structurally separate, by a non-resident owner.	Compulsorily in every case, by Sec. 7 of the Representation of the People Act, 1867.	Payable on whole house if any part is occupied.	Nil.
2. Hereditaments with rateable value not exceeding: £20 in London. £13 in Liverpool. £10 in Manchester or Birmingham. £8 elsewhere.	By agreement in writing for not less than one year, between owner and rating authority. *See* Sec. 3 of the Poor Rates, &c., Act, 1869.	Yes.	Not exceeding 25 per cent.
3. Same as 2, but applying only to dwelling-houses.	Compulsorily by order of rating authority. *See* Sec. 4 of the same Act.	No.	15 per cent.
4. Empty property, same as 2, but applying only to dwelling-houses.	On notice by owner and undertaking for not less than one year to cover all houses owned by him to which an order under 3 applies. Sec. 4 (2) of the same Act,	Yes.	Not exceeding 15 per cent. in addition to the 15 per cent. allowed under 3.
General District Rate in Urban Districts only.			
5. (*a*) Under £10 rateable value; or (*b*) Let to weekly or monthly tenants; or (*c*) Let in separate apartments; or (*d*) At rents payable or collected at any shorter period than quarterly.	At the option of the Local Authority. Public Health Act, 1875, Sec. 211, Sub-sec. 1 (*a*).	No.	Assessment to be not more than four-fifths or less than two-thirds of net annual value.
6. Ditto ditto	Ditto ditto	Yes.	Half assessment.

The foregoing table borrowed from the Land Inquiry Committee's Report, Volume 2, Urban (p. 664), clearly summarises the effect of the general statutes. Certain districts have modifications of the procedure under local Acts, and in some cases "Urban Authorities enter into voluntary agreements by which owners pay in full the poor rate on hereditaments not included in the above table in consideration of concessions on the general district rate."

A general discussion of the advantages and disadvantages of compounding is not in place here. It is alleged, however, that the existing compounding limits hinder the provision of houses for the working classes. The reasons put forward are:—

(1) That the increased cost of building makes it practically impossible to build houses which can be let at rents to come within the compounding limits;

(2) that the existence of a compounding limit tends to penalise the builder, who by the inclusion of small improvements, *e.g.*, baths, inside w.c.'s, &c., &c., brings houses just above compounding limit;

(3) that owners of property let on weekly rentals may be required to perform a public service (collection of rates) for which they get either an inadequate or no remuneration;

(4) that compounding limit prevents owners of property passing on to occupier an increase in rates, although rate is an occupier's charge.

Councillor Marr's Suggestions.

It will be noted that the legislation which fixed the limits for compounding was passed in 1869 and 1875; since when there has been a marked change in conditions. Assuming that the collection of rates from owners instead of occupiers in the case of houses let on short tenancies is to be continued, I would suggest:—

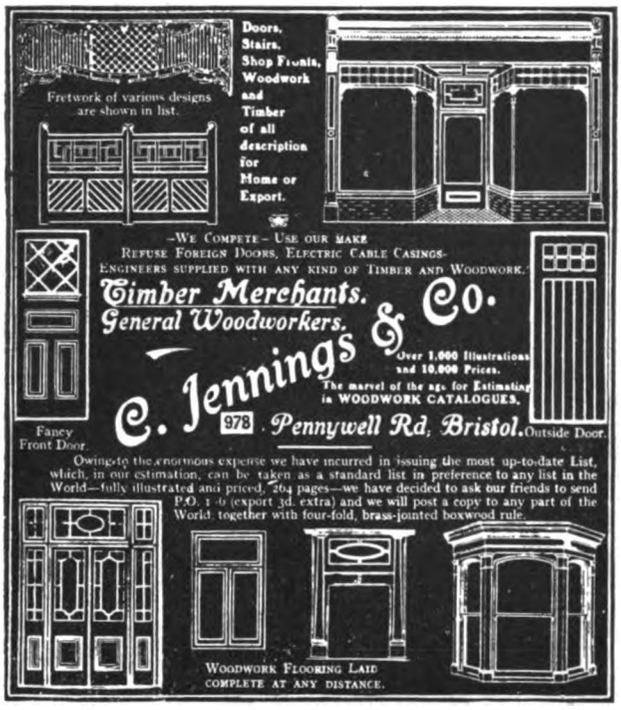
(1) That the system be made compulsory both on rating authority and owners for all houses, irrespective of their rentals, where the rents are collected at less intervals than three months;

(2) that the commission allowed to owners be sufficient to recompense them for trouble and risk of bad debts;

(3) that owners should be entitled to exemption from rates for any period during which a house is empty, and should not be required to agree to pay rates on voids to secure the benefits of compounding.

Suggested New Form of Rent Book.—It will be well here to draw attention to a very desirable reform in the

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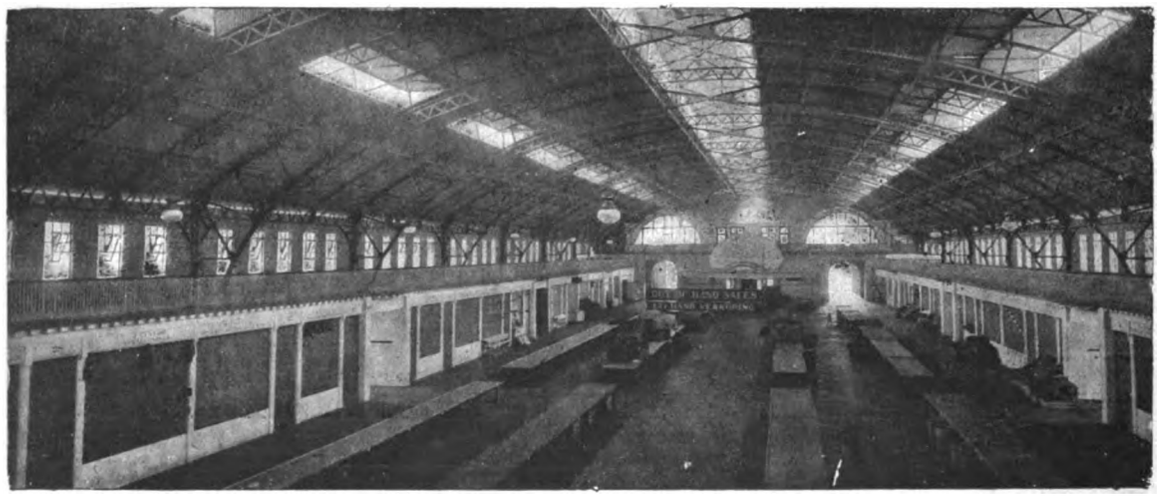
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matter of the collection of rents. As most tenants have only the vaguest idea what proportion of the inclusive rent they pay is for rates it would be an excellent thing if it could be made compulsory that all rent books should state exactly how much of the rent charged was for rates and how much for the landlord.

(8) *The Higher Stamp Duties and Conveyancing Charges.*—This is alleged to be one of the reasons for the decline of housebuilding. It is urged that the heavier the charges are upon buying and selling land by so much will the sales of the same be checked. The experience of other countries where the transfer of land has been cheapened of late has been that this has caused the price of land to rise as making it much more easy to speculate in. If this is to be the effect it would be a mistake to lower the charges.

By the Finance Act of 1909-10 the stamp duty on sales of property for amounts over £500 was raised from 10*s.* to £1 per cent. The stamp duty on leases was also doubled. For instance, on a rent of £5 per annum it was 6*s.* and is now 12*s.*

If the cost of land for a working man's house is put down at £20 it will be seen that these increased duties will only raise the capital cost of a house by 2*s.* If on lease the extra cost is only 1*s.* It is possible that the increase in the amount of these duties may have prevented some sales on the analogy of the "last straw breaking the camel's back," but it would hardly be wise to ask for these duties to be taken off, especially as now the country needs all the money it can raise by taxation in order to meet its liabilities.

As some doubt appears to be prevalent as to what the cost of stamp duties and solicitors' charges is upon the transfer by sale of land the following is submitted as the cost, the solicitors' maximum charges as allowed by Act of Parliament being reckoned.

SALE OF LAND FOR 30 COTTAGES AT A PURCHASE PRICE OF £600.

Freehold Land Sold Outright.

	£9	0	0	to Vendor's Solicitors.
	9	0	0	to Purchaser's Solicitors.
	6	0	0	for Stamp Duties.
	0	10	6	to Surveyor for endorsing plan.
	24	10	6	or 16*s.* 4*d.* per cottage.
Under old conditions ..	21	10	6	or 14*s.* 4*d.* „ „
Difference ..	£3	0	0	or 2*s.* „ „

If land is let on lease or on perpetual chief rent the cost will be rather less than above.

The extra stamp duty imposed by the 1909-10 Finance Act for leasehold land makes a difference of only 1*s.* in the capital cost of a cottage.

(9) *The Holding-up of Land in the Area of a Town-Planning Scheme.*—One of the provisions of the Town Planning Act is that after an Authority has given notice of its intention to make a town-planning scheme for an area of land, and such intention has received the sanction of the Local Government Board, any building which takes place on the land within the area must conform to the provisions of the scheme.

It is a defect that the Local Authority is not compelled to make these provisions within a reasonable time. Authorities when they schedule an area to be town-planned should have some idea as to what they wish to do in regulating the building of dwelling houses, and they should be prepared to say as soon as a building plan comes along what the main provisions of the scheme are.

A Comparison, 1904-1914.—Of the causes given above for the falling off in the provision of workmen's houses by private enterprise it is only possible to give exact figures in regard to (2), (4), (5), and (8). The following calculations of the rent necessary to be charged for the same house in 1914 before the outbreak of war and ten years previously are submitted as a fair estimate:—

COST OF HOUSE AND RENT NECESSARY IN 1904.

	£	*s.*	*d.*	Per annum. £	*s.*	*d.*	Per week. *s.*	*d.*
Land and Development Charges, £40 at 4 per cent.				1	12	0	0	7½
Cost of House, £125 at 4 per cent.				5	0	0	1	11
Repairs, Management, Voids and Bad Debts, 25 per cent. on Net Rental				2	12	0	1	0
Sinking Fund, ½ per cent. on £165				0	16	6	0	4
Rates, 8*s.* on £8	3	4	0					
Water, 10 per cent. on £10 ..	1	0	0					
				4	4	0	1	7
				£14	4	6	5	5½

COST OF SAME HOUSE AND RENT NECESSARY IN 1914.

	£	*s.*	*d.*	Per annum. £	*s.*	*d.*	Per week. *s.*	*d.*
Land and Development Charges, £45 at 4½ per cent.				2	0	6	0	9
Cost of House, £155 at 4½ per cent.				6	19	6	2	8½
Repairs, Management, Voids and Bad Debts, 25 per cent. on Net Rental				3	5	0	1	3
Sinking Fund, ½ per cent. on £200				1	0	0	0	4½
Rates, 9*s.* on £10 13*s.*	4	15	0					
Water, 10 per cent. on £13 7*s.*	1	6	6					
				6	1	6	2	4
				£19	6	6	7	5

The following notes will be of interest in studying these tables:—

Increased Cost of Building: A rise of 25 per cent. is shown on a house costing £125 in 1904 and £155 in 1914.

Development Charges: These are taken as £20 in 1904 and £25 in 1914.

Cost of Land: This is put down at £20 in both years.

Rise in Rates: A rise of 1*s.* is assumed in 1914 over 1904. This rise of 1*s.* would represent a weekly addition to the rent of the house of 3*d.* per week.

Increased Dearness of Money: Though as previously shown the rise in the rate of interest is ¾ per cent. during the ten years previous to 1914, yet in the above calculation a rise of ½ per cent. only is assumed.

Enough has been said to convince most people that it is not likely that private enterprise will be so keen upon providing working class houses as it has been in the past. The greatly increased rent that it will now be necessary to charge for the same house over that of ten years ago will deter speculative builders from proceeding in many places.

Moreover, if Local Authorities are compelled to provide houses in sufficient quantities where there is a shortage, the private investor will feel that he can never get an excessive return on his money through a scarcity, as the Local Authority will step in and build to remedy the deficiency and thus keep down the rents.

Investors are also becoming increasingly averse to being bothered with house property owing to the trouble with tenants about repairs, advances of rents to cover increased rates, and increased interest on mortgages, and it is not likely in the future that their attitude will be changed.

Other means must therefore be found to secure the building of sufficient houses, and suggestions as to such means will be found in Part II. of this paper.

(To be continued.)

Correspondence

The Consulting Engineer and Small Electrical Installations.

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the local authorities to have skilled advice in negotiation and after.

In no lesser degree the same need is felt by others who are interested in new schemes or extensions. If the buyer knows a "first-class contractor" (and there are quite a number who merit that designation), it may be fairly safe, in smaller matters, to leave the plan, the work, and the charges to his discretion. But even in that case a consulting engineer, familiar with the inner working of the trades concerned, can usually save the buyer much more than his fee.

It saves trouble to have a consulting engineer from the first instead of paying him later for adjusting disputes about extras or defects. Besides, it is his skilled business to consider everything from the point of the buyer's immediate and ultimate interest, instead of that of the largest profit to the contractor. The good contractor who desires to act fairly prefers to work to any skilled and experienced consultant known for his fair dealing towards both parties.

In respect of such matters as electric-lighting installations, the leading architects have long ago learned that the interests of their clients are best conserved by making use of an expert free from trading interests.

"Model" and "skeleton" specifications and schedules, as used by the inexpert, are worse than useless, though they may save the contractor trouble in getting prices and measurements satisfactory to himself. Local conditions and requirements, and the constantly changing methods of tradesmen and markets, require the careful study of the consulting engineer.

May a word be added recommending the early planning of undertakings projected for "after the war." Many architects and others, above military age, are unusually free meantime to give careful consideration to such work, and the personal and national advantage of foresight and preparation are now generally recognised.—I am, yours, &c., M.

The Prevention of Bribery.

SIR,—It is expected, judging by past experience, that when the war is over, and there is eager competition for new business amid the general dislocation of trade, the utmost vigilance will have to be maintained to guard against bribery. Now and in the near future there seems to be special need for the work of the Bribery and Secret Commissions Prevention League, Incorporated, in combating corruption in official, commercial, and private life. It is recognised, however, that the demands of the war, directly or indirectly, are such that many persons may be unable to become members of the League at the present time. It has been decided, therefore, as a temporary measure, due to the war, to consider those who give not less than 5*s*. as associates for twelve months. Similarly trade organisations, which wish to help the League but lack the funds for affiliation, or shrink from the responsibilities involved, will be grouped as associated organisations, on making an annual payment of one guinea.

Sir Edward Fry wrote on one occasion: "To cleanse the Augean stable required the strength of a Hercules; to cleanse our commercial and professional life of the foulness of bribery and corruption will require patience on the part of the League and the co-operation of all men who love pure and clean hands."

The League already has considerable support in the architectural profession and the building trades, but there must be many others who might be inclined to become members or associates. I shall be pleased to send particulars to any inquirer, and I hope that this appeal will result in many applications.—Yours, &c.,

THE SECRETARY.

9 Queen Street Place, London, E.C.:
May 2, 1916.

THE death is announced at Eastbourne of Mr. Charles Cox, builder and contractor, formerly of Hackney and Stamford Hill, in his eighty-first year. He was formerly one of the contractors to the London School Board.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

CORNWALL.

St. Ives.—House, Gabriel Street: additions for Mr. Bottrell.

"York House": stables for the Misses Knapp.

DERBSYHIRE.

Tibshelf.—Proposed church hall.

GLOUCESTERSHIRE.

Bristol East.—St. Ambrose Church: vicarage (£2,000).

HAMPSHIRE.

Aldershot.—Premises, Wellington Street, for the Army and Navy Co-operative Society.

KENT.

Broadstairs.—House, Lyndhurst Road. Mr. G. H. Fuggle, builder, The Cottage, St. George's Road.

Sheerness.—Two houses, Bethel Passage; two houses in Kent Street, and house in Sheppey Street, for Messrs. Twigg & Lifton.

LANCASHIRE.

Accrington.—Electricity Works: additions.

Blackpool.—House, Dagger's Hall, for Mr. H. C. Turley.

Petrol stores, New Road, for Blackpool Laundry Co.

Premises, Coronation Street: additions and alterations for Messrs. F. & C. Smith.

LEICESTERSHIRE.

Moira.—Two houses, near Stone Row, for Messrs. Dennis & Ramsell.

Offices, Moira Colliery: additions.

MONMOUTHSHIRE.

Bassaleg.—Parish Church: memorial chapel for Rt. Hon. Lord Tredegar.

NOTTINGHAMSHIRE.

Mansfield.—Lawn Mills, Walkden Street: engine house for Messrs. Harwood Cash & Co.

RUTLAND.

Uppingham.—House, Leicester Road. Mr. F. Scott, builder, High Street.

SURREY.

Croydon.—Four houses, Pollard's Hill South, for Mr. F. H. Crown (of Norbury).

Seventeen houses, Butfield Road, for Betstyle, Ltd.

SUSSEX.

Flimwell.—St. Augustine's Church: restoration.

Littlehampton.—Garage, 68 Norfolk Road, for Dr. Wilan.

Office, near Railway Station, for Mr. L. R. Leggett.

Store, Norfolk Quay, for the British Petroleum Co.

Store, Arundel Road, for the Anglo-American Oil Co.

YORKSHIRE.

Batley.—Dye-house, Smithies Mill, for Messrs. Hirst & Co.

Store-room, Alexandra Road, for Messrs. J. J. Saxton, Ltd.

Catterick.—House and post office. Messrs. Kellett & Clayton, architects, High Row Chambers, Darlington.

WALES.

Cardiff.—Electricity sub-station, the Hayes: extension (£1,200).

Mynytho.—Proposed W.M. schoolroom.

Swansea.—Smallpox hospital (£5,000).

SCOTLAND.

Aberdeen.—Factory: additions and alterations. Mr. G. B. Mitchell, architect, 148 Union Street.

House, Garthdee Road. Messrs. Wilsons & Walker, AA.R.I.B.A., architects, 375 Union Street.

House, East North Street. Messrs. D. & J. R. McMillan, F.R.I.B.A., architects, 375 Union Street.

Office and store, Commercial Road. Mr. J. Cameron, architect, 381 Union Street.

No. 8 Queen Street: alterations for the Northern Loan Co., Ltd.

No. 141 Union Street: alterations for Boots, Ltd.

Nos. 435-437 Union Street: alterations for Mr. G. Bowman.

Dundee.—No. 2 Pump room, Carolina Port: contactor house for Electricity Department.

Dunfermline.—R.C. school (250 places), Rosyth.

Forfar.—Banking premises, Castle Street, for the Clydesdale Bank, Ltd.

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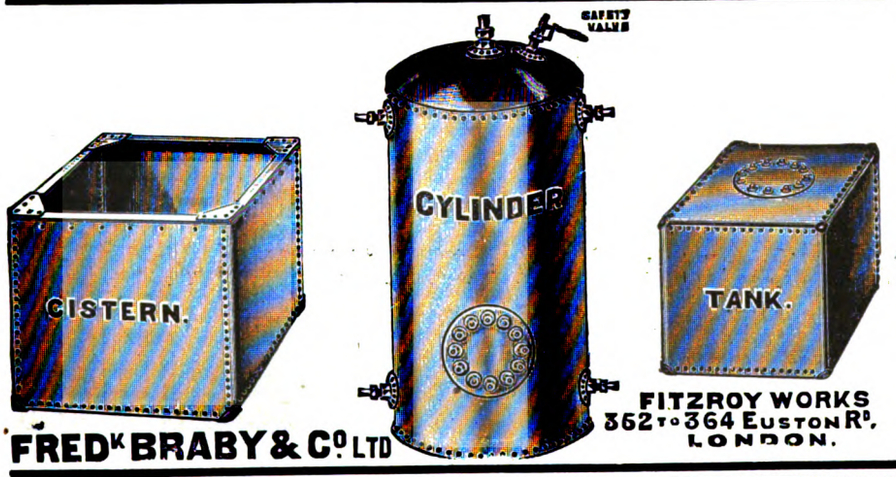
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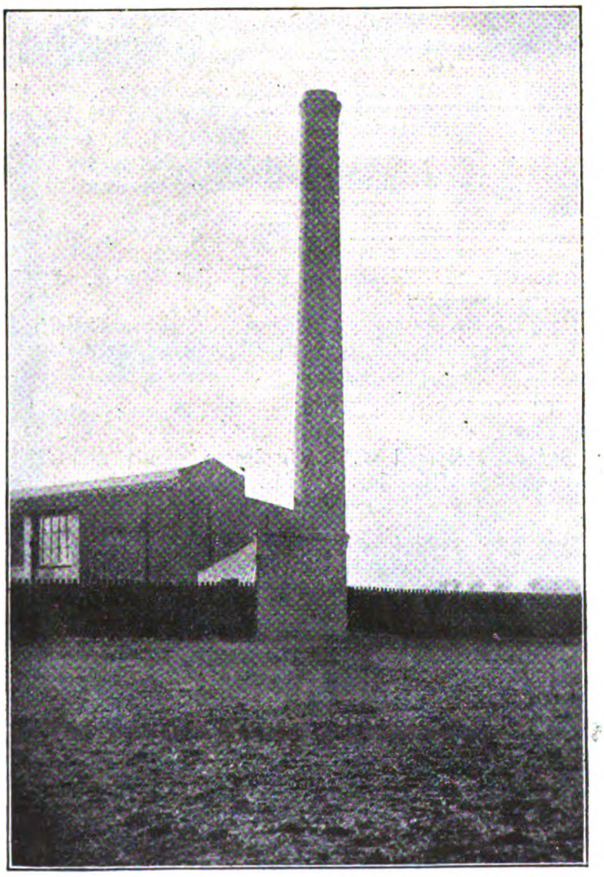
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THE ARCHITECT

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FORTHCOMING EVENTS.

Saturday, May 13.

Institution of Municipal and County Engineers: North-Eastern District Meeting opens at Guildhall, Hull, at 10 A.M.

Edinburgh Architectural Association: Visit to the Royal (Dick) Veterinary College, Summerhall, at 2.45 P.M.

Monday, May 15.

Royal Institute of British Architects: Ordinary Meeting, at 4.15 P.M.

Tuesday, May 16.

Egypt Exploration Fund: Lecture entitled "The Egyptian Ceremony of the Coronation of the Pharaoh, and its Magical Basis," by Mr. W. L. Nash, F.S.A., at the rooms of the Royal Society, Burlington House, W., at 4 P.M.

ARCHITECTURE AT THE ROYAL ACADEMY.—II.

THE ecclesiastical work illustrated on the walls of the Architectural Room is both small in quantity and devoid of any example of great importance. Mr. Reginald Blomfield's "Design for Memorial Slab to Sir L. Alma-Tadema, O.M., R.A.," to which we have already referred, occupies the central position on the wall devoted to church architecture, with which it has this much affinity, that it is designed for erection in St. Paul's Cathedral. Several of our more prominent church architects, whose designs we are accustomed to see year by year on the Academy walls, are on this occasion not represented.

Mr. Temple Moore has only two drawings this year. "St. Luke's Church, Walsall: exterior," shows a design very suitable for a country village church, with a long and low nave, flanked by a short north aisle, presumably for a morning chapel. A square, almost windowless tower abuts the north side of the chancel, and is covered with a pyramidal roof in tiles and louvres. The windows are simple pointed openings without tracery. The whole design is full of breadth and picturesque character and devoid of any expensive or elaborate features. "St. Mary's, Sculcoates, Hull: interior," is another piece of broad, inexpensive yet impressive work, in which the simplicity of the constructive elements gives high value to the richer treatment of the fittings, screens, reredos, and rood

Mr. G. H. Fellowes Prynne has only one drawing hung—"Holy Trinity Church, Exmouth: interior, looking west from north transept." This is a church in Perpendicular manner of nave and aisles separated by a thin arcade. The nave is remarkable for a frieze of coloured figure decoration between the four-centred arcade and the clerestory; the aisles are treated to a ridge roof.

Mr. W. D. Caröe's church work this year, as represented in the Academy, is restricted to "All Saints' Church, Luton," of which both exterior and interior views are shown. As is so frequently the case in Mr. Caröe's work, there is a superabundance of incident which suggests either a perfervid imagination or a too laboured striving after individuality. The exterior of the church is broken up into salient features destructive of all repose, but gaining a character of quaintness from the low squat tower with saddle-back roof over the choir. In the interior there is a curious introduction in the nave arcade, of which it is difficult to recognise the rationale, a sub-arch with a mass of walling over carried only part of the way up the main arch. There is almost a suggestion that the main arches are insufficiently strong and have had to be buttressed up, but, whatever the reason, the result is decidedly quaint, and perhaps that alone was the designer's aspiration. Mr. Caröe is also represented by a drawing of the University College of South Wales in Monmouthshire, a building that has now been erected for some years past in Cathays Park, Cardiff, and eminently characteristic of the designer in its restlessness and studied avoidance of breadth and dignity.

"The Walsham How Mission Hall, Noel Park, N.," by Mr. Raymond T. Barker, is a two-storey building with church above and secular hall below, in the design of which red tile roofs, red brick walls with buttresses and a minimum of stone dressings are skilfully used to give suitable expression and character without tracery. Quite, in fact, a successful design for a mission church.

Mr. Roland Paul's design for "New Throne, Bristol Cathedral," is an elaborate study in Decorated tracery and carving, which combine with strongly marked constructional lines of dignified character that successfully prevent richness of detail from deteriorating into meretricious luxuriance. Mr. John T. Lee's "Rood Screen: St. Thomas's Church, Bethnal Green," is also a good example of rightly-used carved ornament in a wooden church fitting.

In the design of "Proposed New Church at Coventry," by Mr. Arthur Bartlett, we note an influence that may possibly be still further recognised in church design of the near future, the influence of Mr. Gilbert Scott's treatment of Liverpool Cathedral. The wave that followed Bentley's new departure at Westminster has almost exhausted its force, and Liverpool for the time being promises to supplant it. Particularly is this influence seen in the qua-transept projecting bays of the nave, which in Mr. Bartlett's design unite with a real transept to cut up, somewhat unduly, the length that is so characteristically English. Still, Mr. Bartlett's design, with its flat roofs and Decorated tracery, has a modernity of treatment that is also characteristic of our most recent church architecture.

"The Lady Lever Memorial, Christ Church, Port Sunlight," by Messrs. Wm. & Segar Owen, is a richly wrought and costly sarcophagus and recumbent figure set in an open porch with an elaborate rib and panel vault.

Mr. Charles E. Bateman has had a problem to solve in "Ward End Church," and the solution is shown in two interior views, one looking east and the other west. The catalogue suggests by the title of the former, "Ward End Church, looking east," that Mr. Bateman has adopted a rather peculiar treatment for a new building; but in the title of the other drawing, "Ward End Church Alterations, looking west," is revealed the fact that the architect was faced with the problem of improving a building devoid of any character beyond Quaker-like simplicity, exemplified in plain semi-circular arches on square piers for the nave arcade with plain circular openings for clerestory windows above and a range of four plain semi-circular headed windows in the west wall. The solution for the problem Mr. Bateman has adopted

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is to trim up the old building with woodwork reminiscent of fifteenth and sixteenth century feeling, panelling and brattishing around the nave piers, a cambered panelled ceiling, a quasi minstrel gallery screen to the west, and a solid timber-framed division, rather than screen, between chancel and nave. Thus he avoids a falsification of the "history" of the building such as would have ensued from a more classical dressing-up of the original construction, which might have seemed the more obvious course.

"Studies for a Church," by Mr. Sidney K. Greenslade, is rather a design for a cathedral, evidently made some years ago, in which much thought and originality is displayed in the working-out of intricate problems in construction and novel effects in grouping. Drawn in pencil to a small scale, the design is a wonderful piece of draughtsmanship as well as of conception, the full results of which latter it is difficult to grasp, by reason of the novelty of form, without the aid of perspective delineations. Considerable novelty is also to be seen in Lieutenant W. H. R. Blacking's "Design for a Church: perspective view of interior," particularly in the columnar treatment of the support of the aisle vaulting.

NOTES AND COMMENTS.

THE paper on the Principles and Position of Town Planning read by Mr. Davidge before the Surveyors' Institution, of which, owing to exigencies of space, we have been able to give no more than an abstract of what seemed to us the more important parts, should be regarded as a masterly exposition of the position of town planning at the present time. From an appendix to the paper it appears that the number of town-planning schemes in progress on March 31, 1916, was, in England and Wales, 169, of which five have been approved; and in Scotland twenty, none of which have yet reached the goal of approval.

In Canada the Federal Town Planning Commission have presented a report dealing with a comprehensive scheme for the improvement of Ottawa. In this it is contemplated that the central area of the city shall be made a great open space running southward from the Château Laurier and the Plaza Bridge, and at the same level. Canal, railway, and carriage traffic will be on a lower level. On the east side of this space will be the Grand Trunk Station, transformed into a union station, with entrances from both the Plaza and Rideau Streets. The present Post Office will be removed, and the traveller arriving in the city will step out upon an attractive scene, with the Château Laurier, the Parliament Buildings, and the Laurentian Mountains at his right hand, while on the other hand will be the municipal centre, with a new City Hall, Law Courts, &c. The Plaza will extend southward to a diagonal street running through from Laurier Avenue to Rideau Street.

The great thoroughfare east and west through the city will be Laurier Avenue, it is proposed, this to be widened to 90 feet. Sparks Street will be relieved of some of its traffic, and Wellington Street "will discharge its proper function of a quieter street passing by the Parliament Buildings." The Commission urge that the improvement to Laurier Avenue be undertaken at once, it being necessary to provide a tunnel through the cliff at the west end and to lower the bridge over the canal. With this done, the street "will be a finer business thoroughfare than Ottawa now possesses.' While the Plaza will be the central point of the activities of Ottawa as a municipality, Parliament Hill will retain its primacy as the Government centre. The land west of Parliament Hill as far as Bronson Avenue will be used for department buildings. Then, to the east of the Hill will be Major Hill Park, and, stretching along Sussex Street from Rideau to the Mint, other Government buildings less ornamental in character and built for practical utility. The various workshops of the Government will be placed behind these.

The Government buildings are to be the chief architectural features of the capital, and the Commission propose to devote only a moderate space of ground to them, not more than 120 acres in all. There should be a connection between the House of Parliament and Government House, the Commission say, and they propose a great park-like drive along the river from Major Hill Park to the entrance to Rideau Hall.

The proposed national park on the Laurentian Mountains would not only afford excellent sport for rod and gun and have a great forest value with growth, but "it would have priceless value for those who live in or visit Ottawa." Within half an hour "they could pass from the bustle of the capital to the seclusion of the forest. Side by side would be seen the beauty of the city which man has created and that of nature as it has been for countless ages." The Commission say it is not proposed to include this park in the federal district, and that its acquisition need not wait upon the other plans for the capital.

Parks are provided for a city of 359,000 people, although the Commission estimate that by 1950 the population will be 250,000. A great recreation ground or playing field of eight or ten acres would be within a half mile of every dwelling in the city.

In an address to the members of the Selby Scientific Society, Dr. Solloway, Vicar of Selby, gave an interesting account of the early history of the Abbey.

Recalling in the first place the traditional story connected with the foundation of the Abbey, Dr. Solloway said that in the latter part of the eleventh century a monk named Benedict in the monastery of Auxerre, France, had a vision in which St. Germanus appeared to him and directed him to proceed to Selby, and there found a Benedictine monastery. Because of the similarity of the Latin names the monk confused Salisbury and Selby, and found himself at the former place. He missed what he had seen in his vision, the river and a delightfully wooded neighbourhood, and as a result of another vision he eventually found his way to Selby and planted his wooden cross by the river side. The actual founder of the Abbey was William the Conqueror, who made very considerable grants to Benedict to enable the monk to carry out his work. As Benedict was directed to go to Selby it was clear that at that period the place was already in existence, and did not owe its inception entirely to the Abbey. A great many attempts had been made to explain the name of Selby, but he (Dr. Solloway) did not think its meaning had yet been settled. The foundation of the Abbey took place about the year 1069, and Dr. Solloway pointed out how curiously those four figures had played such a prominent part in the history of the town. The Abbey was founded in 1069; in 1690 the tower fell; and in 1906 there occurred the fire which so greatly damaged the structure. Perhaps some of the younger generation might be able to say what took place in 1960. It had been said that the first church was erected on Church Hill, but he did not accept that theory, there being no evidence to support it. What Benedict himself did was not certain, but he would not be very surprised if some day it was found that the very curious part of the south-west end of the church, that had puzzled everyone up to the present, was the first part of the Abbey. The building was greatly changed by the second Abbot, some part of whose work still remained. In those days the church ended in an easterly direction in five apses, and the squat tower, which seemed a little incongruous on the long building of a later date, would be the very thing for a church of that description. In 1123 the church consisted of a tower, transepts, apsidal choir, a south wall, part of the north wall, and one arch. The next Abbot added further arches, characterised by beautiful chevron moulding, called in the vernacular the "zig-zag" pattern.

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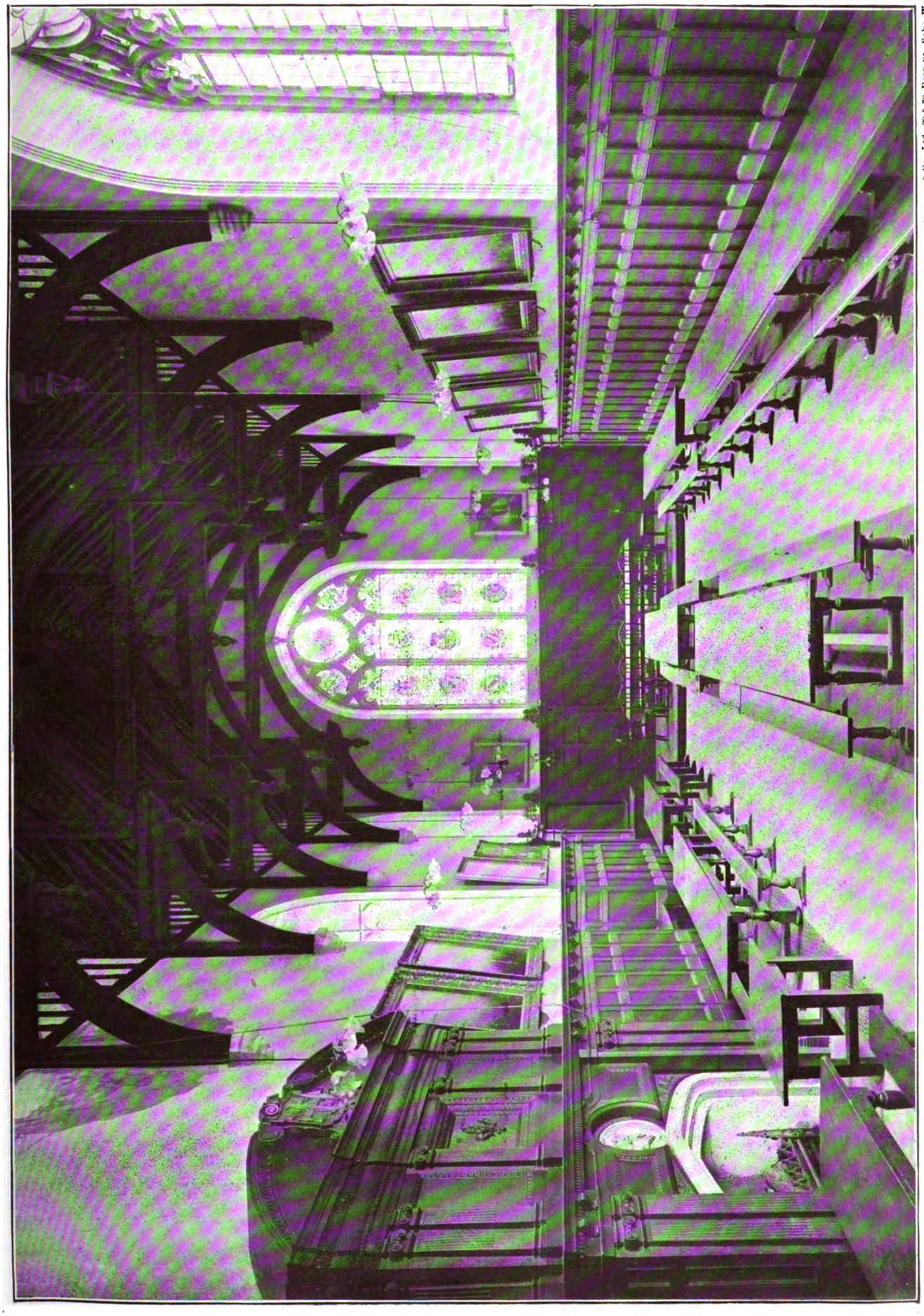


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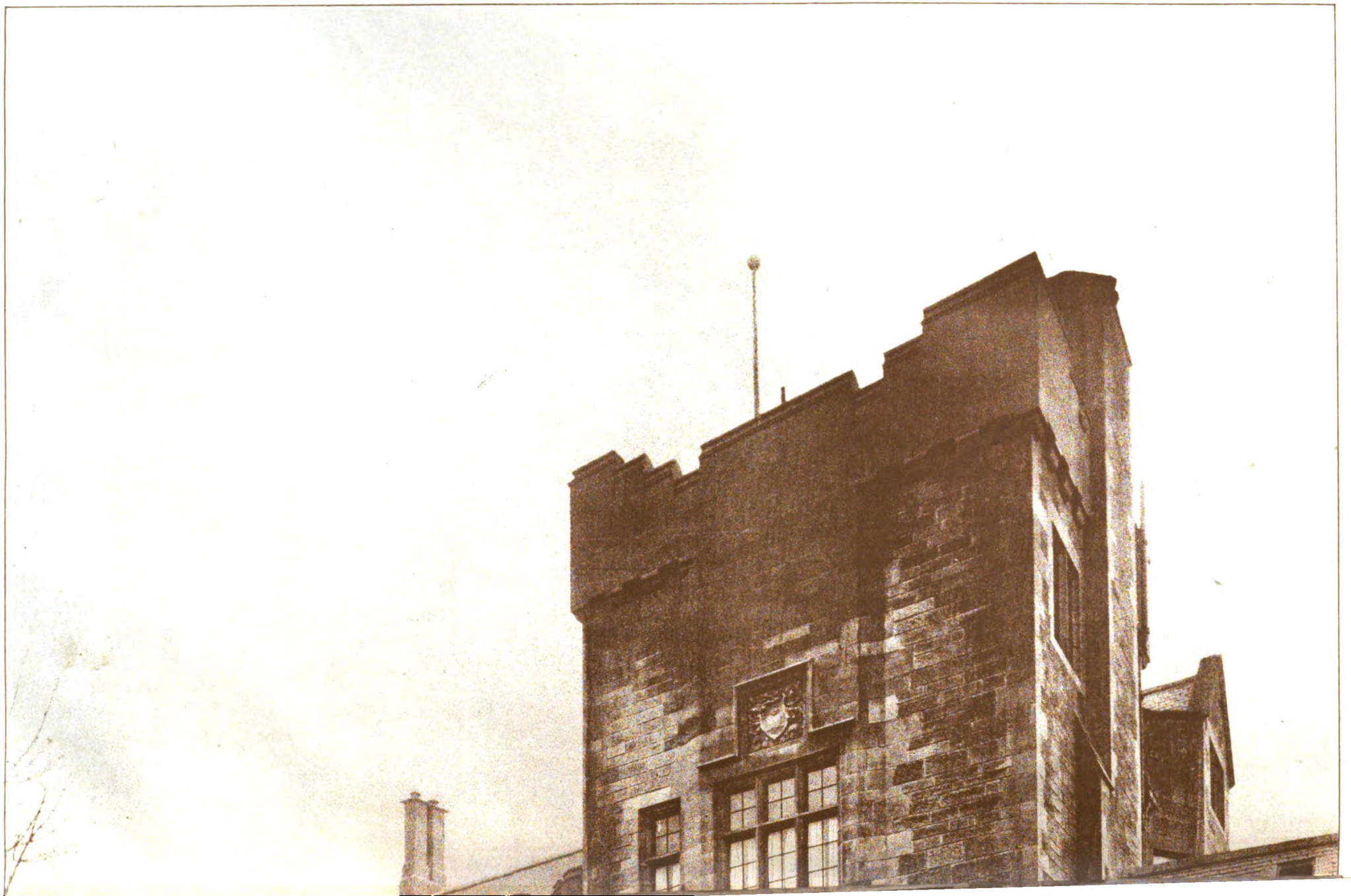
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"STONELEIGH," KELVINSIDE, GLASGOW: FRONT ELEVATION.

Messrs. H. E. CLIFFORD & LUNAN, Architects

(Royal Scottish Academy, 1915.)

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"STONELEIGH," KELVINSIDE, GLASGOW: VIEW OF THE HALL.

(Royal Scottish Academy, 1915.)

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Naturally, at the annual dinner of the Artists' General Benevolent Institution the effect of the war on artists formed a prominent subject, and in proposing the toast of the evening, "Prosperity to the Artists' General Benevolent Institution," the chairman, Lord Redesdale, enlarged upon this topic, pointing out that at the present time, when taxation was straining the power of the rich man almost to breaking point, works of art were among the first luxuries with which men were compelled to dispense. Vast sums were given now and again for masterpieces of Rembrandt, Titian, Velasquez, Reynolds, and Gainsborough, but these prices were paid by millionaires, who, for the most part, were men who did little or nothing to encourage modern art. Even for the most successful artists it must be a difficult matter to realise anything approaching their normal income. The Royal Academy Exhibition this year seemed to him to be one of the best he had seen during the last sixty years. It was an exhibition of the highest courage—evidence of that grand enduring heart of the English gentleman who did not know when he was beaten. Of all professional men, none had offered themselves so ungrudgingly as a sacrifice in this war as the artists. He had been told that every Academician's son was at the present moment in some way or other shouldering a rifle, manning the trenches, and setting an example of courage and patriotism. Lord French's address to the Artists' Corps, in which he referred to them as the finest soldiers in the Army, mentioning that they had suffered more than any other regiment, was an inspiring one, and artists had every reason to be proud of it.

The organ of York Minster was entirely rebuilt in 1903 by Messrs. Walker & Sons, who in avoiding the faults of the earlier instrument produced one which, although beautiful in its softer stops, was not equal in its ensemble to the task of filling the greatest cathedral in the country. The organ has lately become dirty, and the mechanism very noisy through constant use. When, therefore, the Dean and Chapter found that it would have to be dismantled to clean it and renew parts of the mechanism, they wisely determined to take the opportunity of increasing its power to a standard corresponding with the size and dignity of the building. The new tuba just added, although invisible, speaks like its predecessor straight down the nave from a position just above the choir screen. It has a wind pressure of 25 inches. Other additions have been made, while an electric motor and discus fan have been placed in the crypt to supply wind for the new stops. Messrs. Harrison & Harrison, of Durham and London, have carried out the work.

The Easter Vestry meeting of St. Philip's Church, Birmingham, has we think taken the right course with regard to the Burne-Jones windows in that building, of insuring the cost of renewing the glass in the event of its damage by Zeppelin raids, rather than removing them. These windows are sufficiently modern to be replaceable in the event of loss, and stand, therefore, on quite a different footing to such examples of ancient craftsmanship as the windows of St. Margaret, Westminster.

The appearance at the recent Red Cross sale of the chalice formerly belonging to the parish of Sowton was the subject of discussion at the annual meeting of the Exeter Diocesan Architectural and Archæological Society, where this alienation, without a faculty, of church property, was paralleled by the statement of a clergyman present, that a chalice and paten which disappeared from the church of Venn Ottery during a voidance of incumbency in 1877-8 was now in a private collection in Exeter. If these statements are correct, it might be possible to reclaim both of them as parochial property never lawfully alienated. The money value of these old sacred vessels is very great, and they offer a strong temptation to thieves to purloin them for sale to collectors. To protect the parishes from such transactions the parish church valuables should be made inalienable and incapable of being reduced to negotiable property.

If, as has been suggested, an Act were passed enforcing restitution of all alienated church property, even if illegally removed, it is clear that the Victoria and Albert Museum and other national collections would be amongst the greatest sufferers, and it is questionable whether the examples of ancient art and craftsmanship therein stored and made accessible to students and the general public are not safer and more highly appreciated where they are, than if they were restored to and kept in the strong box of a village church.

ILLUSTRATIONS.

STONELEIGH, KELVINSIDE, GLASGOW.

THIS house, treated in a fine rendering of the Renaissance style, was designed by Messrs. Clifford & Lunan, architects.

The exterior was carried out in local freestone, and the roofs were covered with Cumberland green slates.

A rich decorative treatment was executed in the interior. The hall has a dado of square oak panelling, with upper walls hung with tapestry to ceiling. This latter is set with stout oak beams, supported by carved wooden brackets. The chimneypiece is of stone, with metal canopy, and fire on hearth-grate. There is an oak parquetry floor. Access to the first-floor apartments is obtained by a wide oaken staircase, which has richly carved balustrading in the form of a scrpion design, with newels ornamented by pyramidal mounts carved in relief. The staircase walls are hung with soft grey-green tapestry of a floral pattern.

The walls of the spacious drawing-room are panelled with silk, and the woodwork is satin-wood with mother-of-pearl inlays. Harmonising with the wall treatment is the satinwood and green-onyx chimneypiece. In the centre of the chimneybreast is a figured panel in sewn-silk, executed by the Bromsgrove Guild. The ceiling is panelled in ornamental plaster, enriched at extremes by heraldic figures in the form of lions, with star embellishments at ends. The scheme here is completed by a parquetry floor.

A feature of the dining-room is the three leaded windows, whose figure-work represents Sir Galahad. These were done by the Bromsgrove Guild. The woodwork is in natural mahogany waxed, with a low dado. Tapestry hangings fill the walls.

In the library the ceiling is of simple design in ornamental plaster, with cornerpieces. The walls are panelled in oak, which harmonises with fitted bookcases. A feature of the room is the chimneypiece, having mottled marble surround and marble hearth, with metalwork interior and metal canopy. There is an ornamental barred grate.

There is a fine, massive stone chimneypiece in the centre of the billiard-room. It has a tiled interior and metal canopy, with carved frieze below shelf. The woodwork forming dado is of oak; above which the walls are covered with a spotted figured pattern canvas. The trusses and tie-beams to the open-timbered roof are of oak, these latter being supported by full-sized carved figures which rest on stone corbels. The billiard table was designed by the architects.

The principal contractors, all Glasgow firms, were: Messrs. Alexander Muir & Sons, builders; Mr. William Lightbody, who did the joinery work; Mr. John Craig, hardwood finishings; and Mr. Charles Carlton, painting.

OXFORD COLLEGE SERIES.—NOS. 158 & 159: UNIVERSITY COLLEGE CHAPEL AND DINING HALL.

UNIVERSITY COLLEGE has the distinction of being the oldest of the colleges of Oxford; its origin dates from a bequest by William of Durham in 1249, by the aid of

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which an establishment was commenced in 1253. It was not, however, till the fourteenth century that this had grown and come to be known as University Hall. Various additions were made to the college buildings during the fifteenth century, and alterations and repairs at subsequent periods, but no part of the present structure is earlier in date than 1634, and the greater part of the college was built during the succeeding years of the seventeenth century. The eastern extension, or back quad, was built between 1716 and 1719, closely following in design the earlier work of the preceding century. Much falsification of the architectural "history" of the buildings was perpetrated by Sir Gilbert Scott, who seems to have been actuated by a desire to "restore" the character of the fourteenth-century college of which the structure before him was the successor. We must, however, be grateful to Scott that he left so much of the original woodwork of the common-room, including the carved mantelpiece, which was an importation from other property of the college.

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—XIX.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

THE Ducal Palace, Venice—which included the apartments in which the meetings of the Republic were held, as well as the residence of the Doges—has since 1574 and 1577, when much of the interior was destroyed by fires, become a gallery of pictures dating from the later age of Venetian art. The examples are mainly by Tintoretto, Paolo Veronese, and Palma Giovane. Nearly all the masterpieces produced by Gentile da Fabriano and Vittore Pisano, both of whom it will be remembered were invited to Venice to decorate the interior of this palace in the early part of the fifteenth century, perished in these two fires. Works executed at the close of the same century by great masters shared unfortunately the same fate. The great Titian executed some magnificent works upon the walls of the State apartments prior to these devastating conflagrations.

After the restoration of the edifice, Tintoretto, Paolo Veronese, and Palma decorated the interior with some of their most beautiful creations, which in most instances even to-day preserve that wonderful gorgeous colouring so characteristic of these masters, especially Veronese. It is, of course, impossible to mention all the famous works contained within this building; but a few of the most noted cannot be passed without mention. Entering the building at the top of the Scala dei Giganti (piano delle loggie), tickets are taken in the first floor loggia, and the beautifully decorated Scala d'Oro (golden stairs), erected by Sansovino in 1556, is mounted to the third floor (terzo piano).

This Scala d'Oro was accessible in the days of the Republic to only those nobles whose names were entered in the Golden Book (libro d'Oro) as "Nobili". Entering first the small ante-room, the Antrio Quadrato, with the walls hung with portraits of Procurators by Tintoretto, the first ceiling paintings by Tintoretto are seen. They represent Doge Lorenzo Priuli receiving the sword of justice, in the clouds St. Mark as representing Venice is enthroned. Altogether a very fine composition.

The Sala delle Quattro Porte is entered from the last-named vestibule, and is so named because of its four doors. The architectural decorations of this room were designed by Palladio in 1575. A famous picture by Titian upon the entrance wall is Doge Antonio Grimani kneeling before Religion; it was executed about 1555 and placed in its present position after the fire of 1574. In addition to paintings by pupils of Titian and others, there are magnificent ceiling paintings by Tintoretto.

Entering the Anticollegio opposite a fine late-renaissance chimney piece designed by Scamozzi is seen, and this artist also designed the decorations of the room. The ceiling painting "Venetia Enthroned," is by Paolo Veronese, but is much faded. On the wall opposite the windows "Europa carried off by Jupiter in the guise of a bull" is one of this celebrated master's most famous works. Other pictures here include "Forge of Vulcan" by Tintoretto.

The apartment in which the Doge seated upon the throne of State received ambassadors, and known as the Sala del Collegio, is now entered. It includes a number of famous works by Tintoretto and others, Paolo Veronese being represented by "Memorial picture of the Battle of Lepanto" (1571) and the rich ceiling-paintings "Venetia on the Globe" and "Neptune, and Mars, Religion," which are considered the finest in the whole palace. A very fine chamber is now entered called the Sala del Senato, containing the Doge's throne and stalls of the Procurators; these together with the



THE CHURCH OF SANTA MARIA DELLA SALUTE, ON THE GRAND CANAL, FROM THE GARDEN TERRACE OF THE GRAND HOTEL D'ITALIE, VENICE.

seat of the Senators are still well preserved. Over the throne on the west wall there is a "Descent from the Cross," and portraits of the Doges Pietro Lando and Marc Antonio Trevisano by Tintoretto, and a number of wall paintings by Palma Giovane and Tintoretto. The central ceiling painting is particularly noteworthy, and represents "Venice enthroned as Queen of the Sea," by the latter. There are numerous other pictures in this wonderful ceiling worthy of careful examination.

After entering the Antichiesetta or vestibule to the chapel of the Doges, which little chamber, with windows looking out upon the Rio del Palazzo, contains works by Tintoretto and Rizzi, one passes into the Chiesetta or private chapel containing pictures by Bellini and others, and a specially fine sculptured Madonna and Child over the altar by T. Lombardi, 1536, said by some to be by Sansovino. It is necessary to return *vid* the Sala del

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Senato to the Sala delle Quattro Porte, and passing through the ante-room next the Scala d'Oro, the Sala del Consiglio dei Dieci is entered.

In this very beautiful hall sat the Venetian Council of Ten, which was elected yearly by the Maggiore Consiglio, and which controlled with the Doge and councillors every department of government.

The painting of an old man with his chin resting upon his hand is a fine piece of work by Veronese. The pictures in this hall are generally not of the standard of others within the building. The ceiling-painting depicting the "Glory of Venice" is said by some authorities to be by Veronese and his contemporaries; but by others to be partly copies of Veronese's works and works by other artists.

The Sala della Bussola adjoining contains pictures (of no special note) principally of such military operations as the taking of Bergamo, Brescia, &c. From the window of this little room is a view into the courtyard of the Carceri (prison), and it was in the days gone by the ante-chamber of the three inquisitors of the Republic.

Entering the Sala dei Capi del Consiglio (the three heads of the Council of Ten), a chimneypiece is seen by Sansovino, and the caryatides of the same are by Pietro da Salò. The central ceiling-panel is by Veronese, the subject being "Virtue driving away the Vices"; a few not particularly interesting pictures complete the contents of this small room.

Descending by the Scala del Censori to the second floor, really the principal floor of the palace, and passing on the left the Audito, a small ante-room with several small rooms leading therefrom, one enters the great hall known as the Sala del Maggiore Consiglio, wherein met the Great Council consisting of all adult members of the Nobili whose names were inscribed in the libro d'Oro.

This splendid chamber occupies the south-west corner of this famous pile, and the greater part of the lagoon frontage of the palace. Its intended purpose, suggesting height and the desire for large wall spaces for painted decorations, was responsible largely, if not entirely, for the otherwise unaccountable excessive plainness of the upper portion of the west and south façades of this building, really the walls on two sides of this great assembly hall. Its length is 177 feet and its width 81 feet—such a floor area naturally called for much height, and this measures 50 feet.

From the balcony, already noted in dealing with the south façade, a gorgeous view is obtained of the lagoons, with the island of San Giorgio and the Giudecca opposite and the Lido in the distance to the left. The Dogano di Mare and the domes of Santa Maria della Salute, with the picturesque bell-towers of that lovely pile, are to the right. From this same balcony a very fine front view is obtained of the lion of St. Mark on the top of its granite column.

Re-entering the great hall, the first picture one is attracted by is the gigantic production covering the whole east wall above the doge's throne, Tintoretto's "Paradise." This picture, believed to be the largest oil painting in the world, measures 72 feet by 23 feet, and is a wonderful creation of a wonderful master. It is said that Tintoretto was 70 years of age when it was painted.

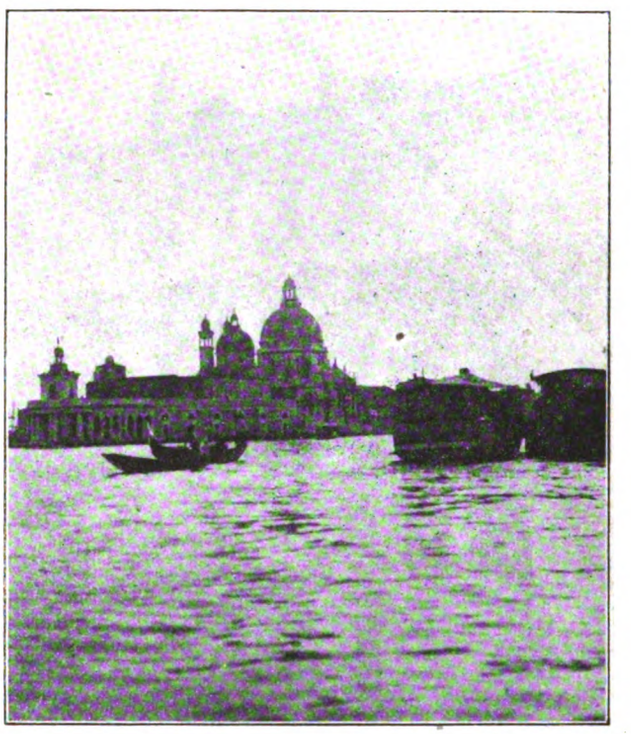
On the great space provided by the wall fronting the Molo there are paintings depicting episodes in connection with the war against Frederick Barbarossa, undertaken by Venice in defence of Pope Alexander III. These are presented in fourteen large scenes, from Doge Sebastiano Ziani (1172-78) receiving the fugitive Pope at the convent of La Carità to Doge Enrico Dandolo crowning Baldwin the Emperor of Constantinople in 1204. The painters include Paolo Veronese, F. and L. Bassano, Iacopo and Domenico Tintoretto, Andrea Vicentino, Palma the Younger, Zucchero, Fiammingo, and Gamberato. The other wall space provides for seven further large scenes illustrating the exploits of Doge Enrico Dandolo, by Giovanni Le Clerc, Andrea Vicentino, Tintoretto the younger, and Palma the younger.

There are on the frieze portraits of seventy-six doges, beginning with Obelerio Antenorco (804-810), the ninth doge of the confederation.

The ceiling of this great chamber with its paintings is worthy of very special attention. Paolo Veronese is represented by "Venice enthroned as Queen of the Sea" (in the large oval near the entrance). In the central ceiling square is a fine piece of work by Tintoretto, "Doge Nicolo da Ponte in the presence of Venice." Other ceiling paintings are by F. Bassano, Palma Giovane, &c.

The adjoining chamber is the Sala della Scrutinio, or Voting Hall, used in the years ago by the scrutineers for the counting of the votes in connection with the election of the doges and other officers. This is a fine hall and completes the west façade of the palace, fronting the piazzetta.

From the central balcony opening from this room is



THE DOGANA DI MARE, CHURCH OF SANTA MARIA DELLA SALUTE, AND ENTRANCE TO GRAND CANAL, VENICE FROM THE LAGOON.

obtained a view of the famous Old Library by Sansovino, and a window on the right upon entering gives a view of the very elaborate renaissance portion in the Corte.

This Sala della Scrutinio has again a beautiful ceiling with pictures depicting scenes from the history of the Republic. On the walls there are, as in the last great room, many fine works, among which is a great picture, "The Last Judgment," by Palma Giovane, besides portraits of the last thirty-nine doges upon the frieze, from Pietro Loredan (1567-70) to Lod Manin (1797).

The Archæological Museum in the east wing of the palace is worth visiting, and contains in addition to a few masterpieces, many items of good classic art. The second room, the Sala degli Scarlatti, which originally was the doge's bedroom, contains a fine early-renaissance chimneypiece by Lombardi and an interesting early-renaissance wooden coffered ceiling. The relief over the entrance door, of Doge Leonardo Loredan kneeling before the Virgin, completes the items of special interest.

The Sala dello Scudo adjoining contains, among other ancient maps, the famous "Map of the World" by the Camaldolensian Monk, Fra Mauro (1457-59). The south is fixed (in the map) at the top instead of the bottom, and it is altogether very curious. Besides a

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portrait of Fra Mauro and some Roman coins, there are six tablets of carved wood from Tunis (of the sixteenth century date), captured by the Venetians in the seventeenth century. From one of the windows of this room in the eastern façade of the Corte a particularly interesting view is obtained of the domes of St. Mark's, and the portion of the building joining the palace to the church.

The next room, the Sala Grimani, the Hall of Busts, is entered, and here are many busts of the doges, and some interesting little paintings and Venetian medals. Here also is a very fine early-renaissance wooden ceiling and a chimneypiece in the renaissance style by Antonio and Tullio Lombardi, somewhat over decorated.

Next is the Sala Erizzo, containing small sculptures in bronze, marble, and ivory. This room again has a magnificent wooden ceiling of the sixteenth century date, and a fine early-renaissance mantelpiece.



PROCURATIE NUOVE, PIAZZA DI SAN MARCO, VENICE.

The Sala Priuli contains an "Adoration of the Magi" by Bonifazio. And the next room, the Sala dei Filosofi, has many interesting works, including a "Fresco of St. Christopher" by Titian, painted about 1524. In a corridor wall close by is a memorial to that Duke of Norfolk who died in Venice in 1399, after being banished by Richard II., and was buried in the vestibule of San Marco. His relics were removed to England in 1533. The choir-apse of St. Mark's and the court of the Palazzo Patriarcale are views to be obtained from the windows in this room.

The last apartment to be visited upon this floor is the Stanze del Doge, three rooms upon the eastern side of the east wing and overlooking the Rio del Palazzo, the private apartments of the doges from 1577-1797.

Round the various walls are renaissance bronze sculptures, reliefs, busts, medals and plaquettes. Bronze statues, seals, coins, and many other interesting items are also within these rooms.

If time permits, the antique section of the museum, upon the first floor (piano delle loggie) is worth visiting. A doorway upon this floor leads down to the Prigioni, a number of very dismal, small dark dungeons, with a torture-chamber and the place of execution for political criminals.

From this same first floor a narrow passage leads to the Ponte dei Sospiri (the Bridge of Sighs). A great deal of sentiment is attached to this picturesque structure, it being said that criminals, after sentence, passed over this bridge from the courthouse to the place of execution, and through the small windows saw for the last time the blue sky. It would seem, however, that this sentiment is largely, if not entirely, wasted, for this bridge simply served as a connecting link between the Courts of Justice in the palace and the criminal prison, and was used solely in this connection; and those who crossed deserved, no doubt, as much and no more sympathy than most frequenters of our own prisons.

Perhaps the glorious surroundings of this undeservedly famed structure called for that little splash of sentimental colouring to complete its picturesque setting; but one can truly say in this instance that such sentimental introduction was a bit of unnecessary artistic liberty.

The Carceri or Prigioni di San Marco was built in 1571-97 by Antonio da Ponte, the architect of the Ponte di Rialto, and was shown with all its architectural setting in one of the illustrations accompanying Article XVIII. It was erected as an ordinary prison for criminals.

Returning to the Piazza San Marco, Renaissance Venice may be studied in the palaces on the north and south sides of the square. That on the northern side is known as the Procuratie Vecchie, a long uniform building erected in 1480-1517 by Pietro Lombardi, Bartolomeo Buon the younger, and Guglielmo Bergamasco. It is stated by some authorities that the lower portion was erected by Pietro Lombardi in 1496, and the upper portion by Buon in 1519. It is worthy of note that it is possible to stand in this famous square and at one glance (as shown in an earlier illustration) see the monuments of the Venice, old and new.

Of the Venice of the three architectural styles and periods are the façade of San Marco, the northern corner of the west façade of the Ducal Palace, the stately Campanile, and the long frontage of the south wing of the buildings surrounding the square. The Byzantine, Gothic, and Renaissance styles, in all their distinctive and transition stages, all in one comprehensive glance, standing in the west end of the Piazza and looking eastwards.

The Procuratie Vecchie, together with the Procuratie Nuove, were the official residences of the nine procurators of St. Mark, the highest officials of the Republic after the Doge. Next to this façade (of the Procuratie Vecchie), on the east end, near St. Mark's, is a very ornamental clock-tower, erected in 1496-99 from the designs of Antonio Rizzo, of Verona, or of Moro Coducci. The tower rises over a high gateway, forming the entrance to the principal shopping street of the city, which street is known as the Merceria, and has many fine shops, and winds its narrow and tortuous way to the Rialto. The great gilt clock rests on the upper floor level; its face is numbered in Italian fashion, I. to XXIV. Over is a gilded figure of the Madonna by Lombardi, and on the platform are two giants in bronze, who strike the hours with their great hammers.

On the south side of the Piazza the façade is of the Procuratie Nuove, begun by Scamozzi in 1584.

The west end of the Piazza was occupied by the church of San Geminiano, designed by Sansovino, who was buried in it, until the Napoleonic occupation. In 1810 this church and a few other buildings were pulled down, and the Nuova Fabbrica, or Atrio, was erected by

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Napoleon, so as to obtain the connecting buildings from the north to the south wings.

The ground floors of these three structures consist of arcades and contain cafés and shops, as before mentioned.

The Procuratie Nuove, together with the Libreria Vecchia adjoining, now form the Palazzo Reale, and are the official residence of the King of Italy when in Venice.

Turning into the Piazzetta di San Marco, the Old Library (Libreria Vecchia) is to be seen on the west side facing the western façade of the Ducal Palace.

This truly noble and magnificent structure was erected by Sansovino in 1536-53, and is regarded as a perfect masterpiece of Renaissance architecture and the finest secular edifice in Italy. Above the Doric columns and open loggia on the ground floor is a continuous arcade of arches and embedded Ionic columns. The parapet is adorned with obelisks and statues. The interior of this beautiful building is worthy of great attention. A ceiling painting in the ante-chamber of the library, "Wisdom," by Titian, with portraits in the main saloon by Tintoretto and ceiling paintings by Paolo Veronese and others, are among the many instructive items. The Old Zecco, or ancient Mint, erected by Sansovino in 1536, is an interesting little building, but heavy and sombre compared with its gorgeous and perfect neighbour.

The survey, rapid and imperfect of the principal items of Renaissance Venice contained within that wonderful architecturally cosmopolitan square of San Marco comes to an end, and the remaining time spent in this splendid city must be away from the area of La Piazza.

(*To be continued.*)

THE PRINCIPLES AND POSITION OF TOWN PLANNING.*

By W. R. DAVIDGE, F.S.I.

(*Concluded from page* 312.)

American Ideals.—American city planning may be divided into four phases:—

(1) Rapid transit, which may be described as the engineer's ideal.

(2) The civic centre, which may be described as the architect's ideal.

(3) The provision of diagonal avenues and parkways.

(4) The provision and linking up of parks, and the scientific distribution of children's playgrounds.

The Civic Centre.—The value of magnificent monumental buildings in encouraging a sense of civic pride is everywhere appreciated, and this, no doubt, is the reason for the American thirst for civic centres. The idea of an architectural conception or ideal, however, is unfortunately in most cases limited to monumental enterprises of this type which are little likely to be carried into effect, and the cost of which would be almost prohibitive. It is strange that such an eminently practical people as the American should devote so large a portion of their "city planning" programme to the provision of these costly civic centres, while allowing miles on miles of rectangular blocks and hundreds of five-storey tenements to be built without a murmur. Business centres and subsidiary centres will nevertheless form themselves in every town.

Diagonal Avenues and Parkways.—It is a remarkable commentary on the rectangular block system of development everywhere to be found in the United States that, almost without exception, planning commissions are reporting in favour of the construction of new diagonal avenues across the rectangular system to provide access in a radial direction to and from the centre or business portions of the various cities.

The rectangular system of lay-out has generally proved quite satisfactory as long as the town remains of limited size, but once the town develops beyond the original square mile or so some form of diagonal communication becomes a necessity, and the improvement plans that are being prepared by practically all American cities are realising this essential point.

Philadelphia has already spent some millions on the "Fairmount Parkway," which is nothing more or less than a diagonal of this description.

Mr. Burnham's well-known plans for Chicago provided for several diagonal avenues of this description radiating from the proposed civic centre and city hall.

The improvement plans of Brooklyn and scores of other cities in the States, and even so far afield as Santiago in Chili, all show the now generally appreciated need for diagonal routes.

The Linking up of Parks.—The linking up of parks by a system of parkways or tree-lined avenues, is also a well-recognised part of American city planning.

The South Park system of Chicago is an excellent example of what can be done in this direction; but Minneapolis, Kansas City, and many others, are all examples of the same tendency. In fact, there is a danger that the new fashion of city will be almost as stereotyped as the old.

Provision of New Parks.—The need for parks in the outskirts to provide for the growth which must come in is everywhere realised, and during the last few years there has grown up a system of acquiring such parks for the public by means of a special rate or levy made by the Park Commissioners on all land in the neighbourhood, the value of which will be improved by the presence of the park. In this way many large areas have already been secured at Kansas City, Minneapolis, and elsewhere at little or no direct cost to the ratepayers, and it has been found in practice that the betterment in value of the property in the neighbourhood of the park more than recoups the owners for the small special rate they are asked to pay.

From 50 to 100 years ago London provided itself with a considerable number of new parks in the ring of open land just outside the built-up area, and it is due to the foresight of our predecessors that we possess such parks as Regent's Park, Battersea Park, Victoria Park, and many others, all now embedded deeply in a sea of bricks and mortar. It is noteworthy that most of these parks were in those days provided at Government expense.

We may well ask ourselves whether we should not now be securing further and larger breathing spaces around the built-up area of all our large towns, and we might, perhaps, at the same time take a leaf out of modern American practice in order to relieve the ratepayers from any unnecessary burden.

The Preservation of River Banks and View Points.—In America it is now a well-recognised practice that river banks and valleys should as far as possible be preserved for park purposes, and that view points and hill tops should be similarly preserved.

Such a course is desirable not only from the point of view of amenity, but to secure the stream from contamination, and, at the same time, utilise land which in ordinary circumstances would be unsuitable for building purposes.

The Example of New Zealand.—In New Zealand there has been on the statute book for many years a law that the banks of all streams and rivers shall be reserved for a width of a chain or half a chain in width, and a special Government department has been set up to deal with natural beauty spots or "scenic reserves."

This but follows the still broader example set by several of the early New Zealand towns in entirely surrounding the township with a broad belt of townlands half a mile or so in width. The example of the park lands at Adelaide is, of course, well known, but it is not so generally known that Christchurch, Wellington, New Plymouth, Dunedin, and other towns in New Zealand, were provided with a similar "town belt," and in several instances these park lands still remain the property of the town. In most New Zealand towns

* **Abstract of Paper read before the Surveyors' Institution.**

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plots of land are also set aside for education endowment and other public purposes.

The question of municipal or State land purchase on a large scale has unfortunately in the past been made a political one, but from the national point of view it is worth while to consider whether it would not be well that large areas of land around all towns should be acquired for future public use, for agricultural purposes, the training of large masses of troops for defensive purposes, and for public health and recreation.

The Civic Survey.—The establishment of tentative experiments in civic survey work for particular areas has revealed, to some extent, the mass of preliminary information and statistical data necessary to a full understanding of the problem.

In few, if any, cases is it possible for a man to grasp the details of the many-sided issues which beset the problem of town planning, and the civic survey is an attempt to bring together and collate the whole of the available information in a graphic form which will appeal not only to the professional town-planner, but to the members of municipal councils and others who often have not the time to properly study the problems affecting their town.

The heads under which such information is most profitably grouped may be taken as—

(1) The site: (*a*) Topography; (*b*) History;

(2) The industries: (*c*) Growth of commerce; (*d*) Causes and direction of growth;

(3) The transit: (*e*) Traffic requirements—origin and directions; (*f*) Water traffic, railway traffic, road traffic;

(4) The enjoyment of life: (*g*) Health requirements, water, sanitation, fire prevention; (*h*) Amenities, architecture, parks, and playgrounds, and last, but not least—

(5) Financial considerations: (*i*) Land value and property; (*j*) Rating, taxation, and loans.

It may seem to some that this covers almost as wide a field as the examinations of the Surveyors' Institution. If so, it is a tribute to the skill and forethought of those who have planned the Institution's examinations to embrace the many-sided activities of our many-sided profession.

BERKS ARCHÆOLOGICAL SOCIETY.

THE annual meeting of the Berks Archæological Society, of which the King is the patron, was held at the Abbey Gate, Reading, last week, the chair being taken by the president (Mr. C. E. Keyser, M.A., F.S.A.), who was supported by the hon. secretary (the Rev. P. H. Ditchfield, M.A., F.S.A.), and the hon treasurer (Mr. J. Hautenville-Cope).

The annual report contained the following items:—

Lectures and Excursions.—Notwithstanding the many calls upon the time of the members of this society on account of the war in which this Empire is engaged, it yet has been found possible to hold as in past years the annual winter session, when lectures on various archæological subjects were given. At a time when many archæological societies have been unable to continue to hold their meetings and excursions, the Berkshire society is to be congratulated upon the fact that in spite of the national crisis and the concentration of the minds of the people upon the war, it has in some way been enabled to perform the functions for which it exists and to carry out its usual programme. Whereas in times of peace many county associations confine their labours to the arrangement of one or two excursions in the year, your society for many years past has always held its winter session in addition to its excursions, and it is satisfactory that although only one excursion was possible this year, the series of lectures has been continued; and the society has been fortunate enough to secure the services of several experts in archæology who have favoured it by their interesting and valuable addresses on subjects which they have made their own.

In war time it is impossible to carry out much research work, but for the first time the actual and extraordinarily interesting results of the president's excavations at Sonning, which were conducted prior to the war, have been laid before the society in an important lecture by Mr. Harold Brakspear, F.S.A. The discovery and reconstruction of an episcopal palace that has been buried for centuries is not the least important of all the antiquarian explorations that have been made during recent years, whether by public bodies or private individuals.

There are few matters of architectural interest to which the committee desire to direct your attention. There is, however, one subject that should occupy the thoughts of our members and calls for special consideration, and that is the safety of the cathedral church of St. Paul, London. Mr. Mervyn Macartney, F.S.A., gave a lecture on the subject, as recorded subsequently in this report. He is the official surveyor of the cathedral appointed by the Dean and Chapter. It is believed that unless the magnificent building, the *chef d'œuvre* of Sir Christopher Wren, be attacked by a Zeppelin raid, its safety has been secured; but the cost of the work has been enormous and the time is difficult for raising money.

At the last annual meeting, May 3, a paper on "The Old Hospitals of Berkshire," by Professor Carleton Williams, who through illness was prevented from attending, was read by the hon. secretary.

On November 29, 1915, the first lecture of the winter session took place, when Mr. Mervyn Macartney, F.R.I.B.A., F.S.A., who is the surveyor of St. Paul's Cathedral, gave a most charming lecture on the history and architecture of this cathedral.

Mr. Cator, F.S.A., on December 11, 1915, took as his subject "The Friars, with particular reference to the Austin Friary of London." Of this lecture no report appears in the "Berks, Bucks, and Oxon Archæological Journal," as the lecturer has promised to print it *in extenso* in the July number of that publication.

Mr. Guy Dawber, on January 28, 1916, interested his audience by his account of "The Mountain Roads in Tyrol and Italy"; this lecture was illustrated by slides made from photographs which Mr. Dawber had taken during his travels in that region. Interest was added to this lecture that it dealt with the country in which the Austrian and Italian armies are fighting over.

The fourth lecture was by Mr. Harold Brakspear, F.S.A., his subject, "The Excavations of the Episcopal Palace at Sonning." The lecturer described the results of the excavations carried out by our president. The illustrations were from a special set of slides prepared under the direction of Mr. Keyser. This lecture, with illustrations, will be published in the April number of the "Berks, Bucks, and Oxon Archæological Journal."

The fifth and last lecture of the session was given by the president, who dealt with "The Architectural Notes on the Berkshire Churches of Sutton Courtney, Appleton, Fyfield, and Besselsleigh." Our president's lectures on the architecture of the churches of this county are one of the chief features of the winter sessions, and are always illustrated by a fine series of slides specially prepared for each lecture.

Despite these abnormal times, the attendance at each of these lectures was large.

It is satisfactory to know that the Victorian County History of Berkshire has been completed, but its publication has been delayed by the war; and it has been deemed advisable to delay the issue of the remaining two volumes until the day of peace dawns.

A volume on "The Parish Church," containing an account of the treasures of architecture and ecclesiastical art to be found in many village churches, including several in Berkshire, has been written by your hon. secretary and was published last autumn season.

Excursions.—Only one excursion took place during the year 1915, on September 7, when, favoured by a fine autumn day, the society visited Wokingham, Easthampstead Park, Finchampstead, Barkham, and Shinfield Churches.

Publications.—The "Berks, Bucks, and Oxon

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Archæological Journal" now enters on its twenty-second year of publication. This opportunity is taken of asking all members of the Berks Archæological Society to become subscribers to it; it is the official publication of the society, and not only contains accounts of each meeting, but it has articles dealing with matters of archæological interest relating to our county. The editors would be glad if fresh correspondents would come forward; old ones drop off, and new writers are very earnestly invited to contribute to its pages.

This report was adopted on the proposition of the chairman.

The balance sheet, presented by Mr. Cope, showed that the year started with a balance of £12 6*s*. 4½*d*., and that the subscriptions amounted to £55 0*s*. 6*d*. Rent, rates, and taxes of the Abbey Gateway cost £36 0*s*. 6*d*., and there was a balance of £10 4*s*. 10½*d*.

It was decided to send a letter to the Mayor and Corporation of Reading, asking them for a reduction in the rent at the Abbey Gate. The chairman pointed out that in addition to the rent they paid the rates, taxes, and for the upkeep, and all these items came to a very considerable amount.

The election of officers was next proceeded with.

Mr. C. E. Keyser was re-elected president and the Rev. P. H. Ditchfield hon. secretary.

G.P.O., DUBLIN.

THE people of Dublin have always been proud of the imposing exterior of their General Post Office in Sackville Street, although admitting that its internal arrangements left something to be desired. However, the latter defect must not be blamed upon Francis Johnston, its Irish architect, so much as upon the exigence of demands which it was never meant to meet. But well known as the building was, it has within the past two weeks achieved little less than unenviable notoriety from its early use as a rebel stronghold, for it was one of the first buildings to be seized. During the past few years the General Post Office has been undergoing a process of modernisation at a cost of about £50,000. This work was completed just before the rebellion, and the issue of the "Irish Times" for April 6 gave an historical account of the development of this most important department. Recent reports from the Irish capital describe the building as completely gutted out by fire. That fact lends additional interest to the article in the above-mentioned paper, while it makes it melancholy reading.

The general scheme of enlargement and rearrangement of the various departments in the "G.P.O.," Sackville Street, Dublin, has now been almost completed, says the writer in the "Irish Times," and the third and last section of the work, portion of which consists of a handsome new public office, will be opened for the transaction of business to-day. The need for a larger and better equipped office has been an obvious necessity for many years past. Fifty years ago the old office was probably sufficient for the work then transacted, but in the interval the duties of the department have been enormously increased, and extensive enlargements of the premises became imperative. That work has now been carried out, and everyone who visits the new office will doubtless agree that the enlargement and rearrangement has been effected in a most satisfactory manner. The floor space is more than double that of the old office, while the air space has been trebled. The old dingy-looking, overcrowded office has now been exchanged for a new, clean, bright-looking and spacious apartment, in which the public will have room to move without crushing and pure air to breathe, while the staff will be able to do their work in a properly equipped establishment.

The story of the Post Office in Ireland has yet to be written, and, perhaps, a few facts as to some of the buildings used from time to time may be given before detailed reference is made to the more important structural improvements that have recently been made. In 1755 Bardin's Chocolate House in Fowne's Court, off Dame Street, was taken for the G.P.O. of Dublin, but the work done there seems to have been very unsatisfactory, there being great delay in the transmission and delivery of postal packages. An Act of the Irish Parliament, passed in 1783, decreed that there should be "one general letter office and post office in some convenient place within the City of Dublin, with sub-offices throughout this kingdom, from whence all letters and packets whatsoever to and from places in Ireland or beyond the seas might be with speed and expedition sent, received, and despatched." Under that Act James Viscount Clifden was appointed Postmaster-General, in conjunction with Mr. William Brabazon Ponsonby, Mr. John Lees being Secretary. The Fowne's Court premises, which also included portion of Crown Alley, were sold to a company of merchants, who subsequently erected on this site the Commercial Buildings, with a frontage to Dame Street.

The G.P.O. then removed to a much larger block of buildings on the south-eastern side of College Green. Here the work of the department was carried on for many years, but as the volume of business continually increased, and as there were may difficulties in the way of enlargement of the premises, it was decided to seek out a new site on which to erect a building more suitable to the ever-widening needs of the service. The present site on the west side of Sackville Street was selected, and the design of the eminent architect, Francis Johnston, the then President R.H.A., was accepted. On the old site in College Green a citizen named George Home erected a "Royal Arcade," which was destroyed by fire in 1837. Portion of the site is now occupied by the National Bank.

The foundation stone of the Sackville Street building was laid by His Excellency Earl Whitworth on August 12, 1814, and was completed and occupied four years later. It was built of granite, and adorned with a beautiful portico in Portland stone, constituting an ornament to the thoroughfare. The principal features are the six fluted pillare of the Ionic order, each four and a-half feet in diameter; the frieze of the entablature is highly enriched, and in the tympanum of the pediment are the Royal Arms. Surmounting the pediment are three statues by the younger Smyth, emblematic of Hibernia, Mercury, and Fidelity. There was also a clock and bells on the building, but these were removed many years ago to the clock tower on the Royal University, Earlsfort Terrace. Up till about 1860 the entrance to the public office was under the portico. Additional space being required for the sorting-rooms, this was obtained by closing the portico entrance, and removing the public office to the Prince's Street side of the house.

The building then seemed to be sufficient for all the needs of the department, but as years passed, and the business continued to grow, various further changes had to be made. The residential apartments were the first to be appropriated for official purposes, the taking over in 1870 of the telegraphs by the State requiring more space. Then the stores, engineers', surveyors', solicitors', accountants', and parcels' departments had in turn to find accommodation in outside premises. Notwithstanding all the relief that these changes afforded, the postal and telegraph business continued to increase so rapidly that early in the present century it became clear that large additional accommodation must be provided. A comprehensive scheme was prepared and was approved by the Treasury. It was divided into three sections, so as to cause as little interruption as possible to the carrying on of the postal business. Progress was, therefore, necessarily slow, and further delay was caused by the labour troubles in Dublin in 1914, and by the shortage of labour and other difficulties arising out of the present war. The first section of the work consisted of the purchase in 1904 and adaptation of the adjoining premises of the Northern Banking Company (Ball's Bank)

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in Henry Street. Additional ground was also acquired in Prince's Street, upon which a new fireproof wing, consisting of three storeys and a basement, was built and completed in 1912.

The third section comprised the general reconstructive re-arrangement, and improvement of the original building, including the providing of a new public office, and also a general sorting office extending to the rear. All this work has been carried out in the most up-to-date style. As to the new public office, a representative of the "Irish Times" on Saturday afternoon had an opportunity, under the guidance of Mr. A. H. Norway, Secretary; Mr. Pentland, architect, and the chief officials of the department, of inspecting the various improvements that have been carried to completion. The old entrance under the portico has been re-opened, and two double swing doors give access to the public office, which runs the full length of the portico, and is about forty feet wide. It is a handsome design in the Neo-Grecian style, and is spanned by a segmental ceiling of steel-reinforced plaster and wired glass, with a segmental pediment carried by four columns and two pilasters at each end. The fittings are of Burmese teak, and the floor of vitreous mosaic. The interior plan may be roughly described as of horse-shoe shape. The public will find ample room in the well, or centre, while stretching round the three sides are the counters for the staff, the brass grill on each section bearing a metal descriptive tablet. In the centre of the well are public writing tables, also a "silent chamber," or telephone call box. On the top of this box is a large four-dial clock, resting on four bronze feet, to mark, as it were, the "fleeting steps of time." The office, as well as the entire building, is electrically lighted, and the greater part of it is heated by hot-water heating apparatus. The public footpath in front of the office has been widened by the removal of the old railings, and the six cast-iron oil lamp brackets—interesting relics of the pre-gas period—which formed part of these railings, are being mounted on iron Corinthian fluted columns, and will be erected on the edge of the pathway as standards for electric lamps. A public clock, electrically lighted and controlled, will be placed over the entrance door, in a bronze case, from a design based on a sketch by Francis Johnston (initialled "F. J., April 16, 1820"), kindly lent by Mr. Albert E. Murray, R.H.A.

The architect of sections 1 and 2 was Mr. Robert Cochrane, I.S.O., LL.D., principal surveyor to the Commissioners of Public Works, who retired a few years ago. His successor, Mr. J. Howard Pentland, Art.Ing. Bac., R.H.A., was the architect of section 3, and the contractors were Messrs. J. & W. Stewart, of Dublin and Belfast.

A NEW HOUSING POLICY.

(Concluded from last week.)

PART II.

II.—That inasmuch as all parties in the State are unanimous in thinking that it is the duty of Local Authorities to see that the working classes in their districts are properly housed, it is very desirable that new methods should be found to enable Local Authorities to co-operate with different forms of private enterprise in providing houses for the people.

It is perhaps hardly necessary to emphasise the assertion that all parties agree that it is the duty of Local Authorities to see that the people in their areas are properly housed, yet the following extracts are interesting as showing this.

In a Bill introduced in February 1914 by some Unionist Members of Parliament the following appeared in the preamble:—

"A special Department of the Local Government Board is to be formed which will be employed exclusively in the supervision of the operations of Local Authorities under the Housing Act. This department will co-ordinate the work of the various officers of the Board already employed in the work. It will assist Local Authorities by advice and information, and will annually make a special report to Parliament on housing matters.

"Where a Local Authority is culpably neglecting its housing duties the Local Government Board will be empowered, after application to the High Court, to deal with insanitary houses and to provide housing accommodation itself in place and at the cost of the Local Authority."

In the housing proposals of the Liberal Government, published by the Central Land and Housing Council in 1914, the following occurs:—

"The Liberals propose to make it the duty by law of all Town Councils to see that enough good houses are provided, if private enterprise fails to provide a sufficient supply. The Councils will have to see that enough healthy housing accommodation is to be had for all people working in the district or likely to be settled residents there."

How Dwelling Houses have been Provided in the Past.—Dwelling houses have been provided in the past for workmen by: (*a*) Private enterprise. (*b*) Building Societies. (*c*) Co-operative Societies. (*d*) Public Utility Societies. (*e*) Local Authorities either (*a*) building houses and letting them directly to tenants, or (*b*) providing houses under the Small Dwellings Acquisition Act. (*f*) The State building directly—as in Ireland, and, recently, in some munition centres.

The first of these forces has been responsible for the building of the great bulk of the houses in the country. The other forces have, taken together, been responsible only for a very small proportion of the existing houses. Thus it will probably be within the mark to state that at least 90 per cent. of the supply of workmen's houses in the kingdom has been provided by private enterprise—mostly by the speculative builder.

As has been said previously, it is to be feared that unless rents are to be raised very considerably, we shall have to depend on one or more of the other forms of enterprise, for it is not likely that speculative builders will build if they must ask 2*s*. or more a week above the rents now ruling for similar houses.

Not only, therefore, will private enterprise be discouraged, but building by co-operative societies and public utility societies may also be discouraged, and it may therefore be necessary to rely primarily on Local Authorities to fulfil their duty of remedying the shortage of houses in cases where other means have failed.

It is estimated that there are required yearly some 100,000 new houses in order to provide for the increase of the population and the replacing of insanitary dwellings. But the demolition of houses unfit for human habitation has as yet hardly been dealt with, and there are probably 600,000 houses in the country that would be closed if there were any other houses for the people living in them to remove to.

Now, when it is stated that so far there have only been in all some 12,000 houses and tenements erected by Local Authorities since the passing of the 1890 Act, which gave them permission to build, it will be seen that their action has up to now merely touched the fringe of the problem.

They will doubtless do more in the future, but it must never be forgotten that the duty of building houses where there is a shortage is one that most Local Authorities have the greatest reluctance to undertake. Workingmen voters themselves are by no means of one mind in this matter, and one often hears the mutually destructive arguments advanced that Local Authorities when they build do so extravagantly and have to let at a loss, and, on the other hand, the workman will ask why he should pay charges in the rates in order that his fellow may have a "cheap" house. Therefore one must expect, until the average voter is more unanimous about this, that many Local Authorities will delay doing their duty in every possible way and use one reason after another to delay building themselves.

If the above is accepted as being the present position

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we should use our best endeavours to think out alternative or additional means of solving the problem of how to get houses built for the working classes. The most hopeful method would appear to be the joining of municipal enterprise with public utility societies and the buying of land in sufficiently large quantities by Local Authorities so as to keep down the price, and then, either for the Local Authority to build, or to let sites, on easy terms to public utility societies, co-operative societies, or to private builders under such conditions as are suggested below.

In order that Local Authorities may be able to purchase land on reasonable terms it is essential that no objections should be made to buying suitable land when owners want to sell. One reason why the complaint that Local Authorities buy too dearly is justified is because they can as a rule only purchase when they want the land for a special purpose and must have it. When that is so they naturally have to pay more than it is worth.

In a paper published two years ago by the present writer proposals were made by which a Local Authority in carrying out its duty of building houses for the working classes should itself form a co-partnership scheme with the tenants where there are a sufficient number of working men who would be willing to join the Local Authority in forming such a society. The following extract from the paper in question will explain the proposals:—

Local Authorities to Form a Co-partnership Scheme with Tenants.—The desirability of bringing tenants in as partners in a housing undertaking must be admitted by all, and, this being so, any workable scheme which would effect this and offer inducements to the tenants to take good care of their houses, and so minimise the cost of repairs, would have much to recommend it.

It is, of course, extremely desirable to encourage thrift, and the payment of a small sum each week in the rent would have this effect.

Such a scheme I will endeavour to outline. Houses being wanted in a town or district where a sufficient number can be built to make the project worth while (it will be found that 200 to 300 houses is a number which can be most economically managed), the Local Authority proceeds to buy an estate, to lay it out under town-planning conditions, with expert advice if necessary, and to build suitable houses for the working classes. The best plan is doubtless to build houses for the better-paid artisans, as these can be let at the best paying rents and they will attract a class who are willing to pay something extra each week so as to have a stake in the undertaking.

Then the Council decide that a co-partnership society shall be formed. The directors might be six to eight. Four of them should be members of the Council, two should be elected by the tenants as representing their interests, and if found desirable two members could be elected who are interested in the question of housing and co-partnership, and living in the town or district. It would be an advantage if women were on such a committee.

The whole of the capital required for building the houses would be found by the Local Authority, who would decide that eight-tenths of same should be a first fixed charge on the property and receive interest at the rate at which the Local Authority borrowed the money. Of the remaining two-tenths, one-tenth should be treated as share capital belonging to the Local Authority, and the remaining one-tenth should be the tenants' share capital. At first this would not be paid up, and would be found by the Local Authority and considered to be a loan at 4 or 5 per cent. interest. As the tenants' contributions increased this would be gradually extinguished.

The Local Authority to charge a ground rent on the houses, which would be leased to the society for eighty years. A fair sum to put down for this would be 8*d.* per week. It would not exceed this amount if land can be purchased at not more than £300 to £400 per acre.

The following conditions are suggested for an agreement between the Local Authority and the society:—

Land to be leased to society for eighty years. After sixty years, the loan charge having been repaid by sinking fund, the tenants to have rents reduced or a bonus paid on their shares each year.

After eighty years the property to revert to the Local Authority, who would repay the tenants the value of their shares. If at that period there was any further value in the property the society might be allowed to lease the property for a further period, say, of twenty years.

Tenants to pay each week the sum of 6*d.* in addition to their rent, which would be credited to their share accounts until they each had £20 in shares paid up.

Should any tenant wish to leave his house and sell his shares he should be at liberty to do so to anyone wishing to take the house he was leaving, but the committee should have power to refuse an undesirable tenant. If he could not dispose of his shares they would remain to his credit in the society and he would receive dividends upon them when any were paid.

Proper safeguards would be required to enable the Local Authority to insist on the property being kept in good condition, and possibly a clause should be put in making any alterations in rent subject to the sanction of the Local Authority.

Objection may be raised to these proposals that practically all the capital is being found by the Local Authority. This would be so at first, but surely the disadvantages of this would be outweighed by the fact that there would under such a scheme be tenants who would co-operate in keeping expenses down, and would be anxious to help to run the society with a minimum of cost in repairs. Voids and bad debts would be practically eliminated, and these form an important item in the weekly rent a private owner must charge.

In the calculation given in Part I., showing the rent necessary to charge for a house, 25 per cent. on the net rental was put down for management charges and repairs. In some of the best-managed public utility societies this has been reduced to 17 per cent. This would mean a saving of 5*d.* per week in rent.

It has now seemed necessary to carry these proposals further so as to identify more closely the connection between municipalities and private enterprise of various kinds. It would seem desirable now to give to Local Authorities the powers at present possessed by the Public Works Loan Commissioners for lending money for housing purposes. The advantages of this would be that Local Authorities would be in far closer touch with persons or societies desirous of bnilding houses. They would also be able through their officials to inspect such houses whilst they were being built without the long and irritating delays at present complained of. Furthermore, during the period in which the loans were being repaid the houses would be constantly under the eyes of their officials, and this fact would justify a larger proportion of the capital being advanced than is done at present.

Additional Suggested Developments in a National Housing Policy.

New Duties of Local Authorities.—(1) In addition to performing their duties under the Acts of 1890, 1909, &c., Local Authorities should have the power to lend money to public utility societies for the housing of the working classes as is done now by the Public Works Loan Commissioners, but with some of the restrictions and anomalies now in force removed. (What these restrictions are is well shown in a memorandum at the end of this paper written by Mr. Gaunt, of the First Garden City.)

It is not suggested that the powers of the Public Works Loan Commissioners should lapse, but that applications for loans to them should still be made by those

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societies or persons who prefer to borrow money through them, and also for those districts where the Local Authority did not wish to use these powers—perhaps because they had no housing problem.

(2) Local Authorities should be enabled to borrow from the Treasury for all such housing schemes at a ¼ per cent. more interest than the Government itself can borrow at; or, alternatively, that the rate of interest given to depositors in the Post Office Savings Bank should be the basis for the rate of interest to be charged and Local Authorities should be enabled to borrow at a ¼ per cent. more than this rate. (There was on December 31, 1913, £187,000,000 invested through the Post Office. The demand that this money deposited by the working classes should be used for building their houses seems irresistible. In other words, "The People's Money for building the People's Houses.")

(3) Local Authorities should lend to public utility societies for the purpose of building houses for the working classes on municipal land (which is leased for a term of not more than eighty years) at a ¼ per cent. more than they have themselves to pay to the Treasury. Up to 90 per cent. of the value of the house should be lent subject to sinking fund repayments being spread over not more than fifty years.

(4) Money should also be lent by Local Authorities to public utility societies for the purpose of building houses elsewhere than on municipal land (where the land is freehold or long leasehold). Up to 80 per cent. of the value of the houses and land should be lent subject to repayment in forty years

Definition of Local Authority.—The Local Authority should be the Housing Authority for each district, as defined in the Housing and Town Planning Act, 1909; County Councils in all cases to have concurrent powers.

Stipulations by the Local Government Board.—Should these proposals be carried out it would be necessary for certain safeguards to be insisted upon by the Local Government Board. The Local Government Board might insist that all houses for which this money is lent should be built in accordance with the model by-laws of the Government Board, and that the sites should be laid out on town-planning lines, with a certain minimum site area for each house. They might also arrange to inspect any houses upon which money was lent, on their being ready for habitation, so as to guard against laxness on the part of the Local Authority.

Stipulations by the Local Authority.—The Local Authority should insist on a certain quality of materials being used, and they might, for instance, stipulate that bricks should be used only from certain brickyards where the quality was unexceptional. They would naturally insist on a good standard of workmanship, and would not pass work they now accept from some speculative builders. Local Authorities should insist that to ensure a good standard of building the same conditions should apply as to engaging labour as are stipulated for in contracts given out by them. They would make stipulations as to the keeping of the houses in repair, and the periodical painting of the same. They should likewise have the power to refuse to lend money if the design of the house was not satisfactory, and they should be able to have more control of the number of people to be allowed to live in a house of a small type, say with only two bedrooms.

In advancing money to the extent of 90 per cent. of the value of the houses to public utility societies, the Local Authority should have power to refuse advances in case the rules of the society do not provide adequate safeguards for the repayment of the money lent over not more than forty years. Such safeguards should be either the fixing of the rents at such a figure as would cover the full yearly charge of the sinking fund, or if this is not done, then there should be a weekly payment by the tenants either towards the purchase of shares or loan stock of such a sum as would provide for the yearly charges for sinking fund. This would be necessary so that the society should always be in a solvent position.

Advances to Private Builders or Individuals desirous of Building or Purchasing Houses.—The following are the present powers for lending money to private individuals for building or purchasing houses.

(1) Under the Small Dwellings Acquisition Act of 1899, Local Authorities with a population of over 10,000 can advance money to: (*a*) residents or intending residents of houses actually built; (*b*) to the extent of four-fifths of the market value, but not exceeding £300 on a house; (*c*) the market value of the house must be certified by the surveyor, the title must be clear and the ownership vested in the Local Authority by mortgage subject to redemption when advances are repaid.

This Act has been little used except at Gillingham and Ilford, and has not done much to solve the housing difficulty, as few working men are willing to find the necessary one-fifth of the cost of the house.

(2) Private individuals can borrow under Section 67 of Part III. of the Act of 1890 from the Public Works Loan Commissioners for the purpose of building houses for the working classes on the following terms:—(*a*) Interest will be such as from time to time is fixed by the Commissioners. (*b*) Loans must be repaid in not more than forty years. (*c*) The estate must be freehold, or if leasehold, then there must be at least fifty years of the term unexpired. (*d*) The advance must not be more than one-half of the value of the land and buildings, but money may be advanced from time to time as the work progresses.

Before lending money the Commissioners make certain stipulations as to rents, &c. Borrowing under this section has been very little used.

It has been thought necessary to give the above summary of the law as it stands before considering whether any further powers are desirable for advancing money to private individuals who are not limited to the profit they may make on their housing schemes.

It is a sad fact that over the greater part of the country the houses built for the working classes are unsatisfactory, inasmuch as the work is often scamped and the details of construction considered too much with an eye to cheapness. It is difficult to find a remedy for this as working men cannot be got to pay more rent for better built houses, and indeed this is not to be wondered at since in most cases they would only have the landlord's word that the house was more sanitary and could not judge whether the assertion was true or not. £20 added to the cost of a house in better workmanship and precautions against damp would mean 7*d.* a week more rent.

As our present building is not satisfactory we may inquire whether we could get this improved, if it was made possible for builders or for individuals desiring to buy houses to obtain advances from Local Authorities for houses built to a better standard than the usual workman's house and with the actual work better carried out.

Objections may be raised that it would be bad policy to lend public money to persons who are not limited to any profit made on their undertaking, but this principle, if it is a good one, has already been given away in the powers under Section 67 of the Act of 1890 quoted above. Also it may be said if you lend to builders why not to others who are engaged in providing other articles used by the working classes? The answer to this last is surely that in the case of houses advances are made for the provision of a certain class of house which is badly needed, and of which it is extremely desirable from a health point of view that the standard should be raised. Also those who may live in the houses are limited to a certain class of the population.

Suggested Loans to Builders.—The Local Authority possessing housing powers should have power to advance money on the following conditions to builders desirous of building houses for the working classes or to individuals desirous of getting the same built.

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(1) The houses shall be built upon land owned by the Local Authority and shall be let at a ground rent covering the cost of the land and development charges for a period of eighty years, and including sinking fund charges. The land to be laid out on town-planning lines. If at the end of this period the houses are still in good repair and fit for habitation the owner shall have the right to lease them for a further period. It is suggested that this should be not more than twenty years at a rent based on the then price of the land.

(2) The Local Authority should be allowed to advance 80 per cent. of the value of the house or houses as certified by their surveyor or a responsible architect, whichever is preferred by the Local Authority. The rate of interest charged to be ½ per cent. more than the rate the Local Authority pay to the Treasury or can borrow at themselves.

(3) Loans to be repaid in not more than forty years by annual repayments for interest and sinking fund.

(4) Houses to be built according to by-laws approved by the Local Government Board.

(5) Designs to be approved by the Local Authority, as also the materials to be used—a good standard of workmanship to be insisted upon.

(6) Stipulations to be made as to repairs being properly executed, and in case these are neglected Local Authorities to have power to do the same and charge to owner.

The sanction of the Local Government Board to be obtained before any agreement to lend money is entered into by the Local Authority, as also their approval of the designs of the houses and the lay-out of the plots.

Suggested Extension of the Small Dwellings Acquisition Act.—One of the hardships of the working man who owns the house he lives in is that if he desires to realise it for various reasons such as changed circumstances through sickness, unemployment, or his having to leave the town, he is often unable to do so except at a great sacrifice.

It is suggested that Local Authorities should have power to advance money to persons desirous of purchasing their own houses, in cases where these are built on land owned by the municipality, up to 90 per cent. of the value of the same or of the purchase price if the house is a newly built one. The money to be lent at ½ per cent. more than the Local Authority itself borrows at and the loan to be repaid by annual repayments of principal and interest over thirty years.

The Local Authority to enter into an agreement to repurchase the house if required to do so in cases where it is satisfied that the owner is *bona fide* unable to continue living in the house. The price to be repaid should be the value of the house calculated as if the payments of the tenant for principal and interest had been for sixty years. The tenant would lose the 10 per cent. first found by him, and would be required to put the house into proper repair if it was not in good condition.

Final Note.—In considering the proposals detailed above, which some may think are revolutionary and against the ideas that have so far guided us in our housing legislation, it would be well to consider what has been the result of this legislation.

Can anyone deny that the results so far of our efforts to get decent houses built by public money have fallen far short of the hopes of those who have striven in the past to secure the granting of constructive powers to Local Authorities? It would almost seem as if the powers that have been given have been framed with the intention that they should be used only in exceptional cases.

Would it not be well now to consider not so much whether any proposed powers are likely to be abused but rather whether they will get houses built which are so greatly needed? After all, that is the great thing we want, and we should as housing reformers be prepared to welcome all kinds of new departures in housing legislation, if as a result we get much-needed houses of a good design and of sound construction.

ADDITIONAL MEMORANDUM ON NECESSARY REFORMS OF THE CONDITIONS UNDER WHICH MONEY IS NOW LENT TO PUBLIC UTILITY SOCIETIES BY THE PUBLIC WORKS LOAN COMMISSIONERS.

By W. H. GAUNT.

I think the Acts of about 1875 and subsequently, conferring the powers upon the Public Works Loan Board, give them power to enforce such detail conditions as they think fit, and these difficulties are within the power of the Public Works Loan Board and the Treasury to remove. The mortgage deeds have tightened up the restrictions gradually, but I am quite willing to believe that some operations of certain public utility societies have engendered this stringency. I only give you, therefore, the point of view of two or three I am acquainted with here which are *bona-fide* working to economically house genuine working families.

(1) The valuation is not two-thirds of the value of the property as represented by its contract price, plus architectural and legal fees, but is by some number of years' purchase of the rents to be charged, usually sixteen (fixed by the Public Works Loan Board), which, as the rents are kept as low as possible by the society, works out at considerably less than the 66⅔ per cent. of the cost and value of the property. If the society conscientiously fixes its rents low, it is thereby at a disadvantage.

(2) The rent once fixed cannot be increased or reduced. The former means that with the increasing cost of labour and materials for repairs, or with new sanitary and Local Authority requirements, the society has a decreasing investment. Also, as the society annually pays off each year one-thirtieth of the sum advanced at 4 per cent., it has to replace this by ordinary stock or shares on which a higher interest has to be paid, and this comes out of the society's revenue and cannot be transferred to the legitimate responsibility of the tenants, who have had the advantage of the cheaper money while it was being enjoyed by the society.

(3) If the society has a special revenue expense in the year by weather damage or otherwise, and its return to its shareholders is decreased that year, it cannot pull that up the next or following years because the return to the shareholders is fixed at 5 per cent. *in any one year*, and not over an average period of years. It means "heads, the society loses; tails, it cannot gain any advantage."

(4) If the society, to please its tenants, carries out some improvements and adds to the material comfort of the tenants and the value of the cottages, it cannot by reason of this limitation of rent to a fixed original figure charge something extra weekly for the improvement, although the tenant is quite willing to pay.

(5) If the society in a period when certain cottages are not so easily lettable as others, and when other cottages are much more in demand than others, alter the relative rents so as to give the same average return from the property, all the losses must come out of the shareholders, and it cannot avail itself of the rather better return procurable on the rest of the property. That means out of 100 cottages one may have thirty erected to let at 8*s.* 6*d.* a week, and seventy at 6*s.* a week. If the better cottages, owing to changed circumstances, could be let at 8*s.*, but not at 8*s.* 6*d.*, they would have to stand empty. And yet the 6*s.* might be so much more in demand that new tenants would readily pay 6*s.* 6*d.* and help the return to the shareholders the same, but it cannot be charged.

(6) The limitation of tenants by the definition of "working classes" (which is, by the way, a most ambiguously worded document) precludes catering for any family unless their earnings are lower than £2 per week. It may be interpreted differently, but the fact remains that the Public Works Loan Board will not advance on property at Letchworth higher than 9*s.* a week, exclusive of rates. Now with the increasing cost of construction, concomitant with the increased earnings of the tenants, this limit is out of date for such a town as this, and there are very many families, composed of father and sons and daughters in various employments, who could well afford a rental of, say, 12*s.* a week, exclusive of rates, and should, if they are so inclined to spend their wages on such a desirable standard of house accommodation, be catered for by public utility societies out of Government advances, particularly when circumstances are now such that no one else is meeting this demand. I have a case where a working man earning 32*s.*, a son earning 28*s.*, three daughters earning 18*s.* a week each, want a four-bedroom cottage to sleep decently in, and would pay 11*s.* There is another case of

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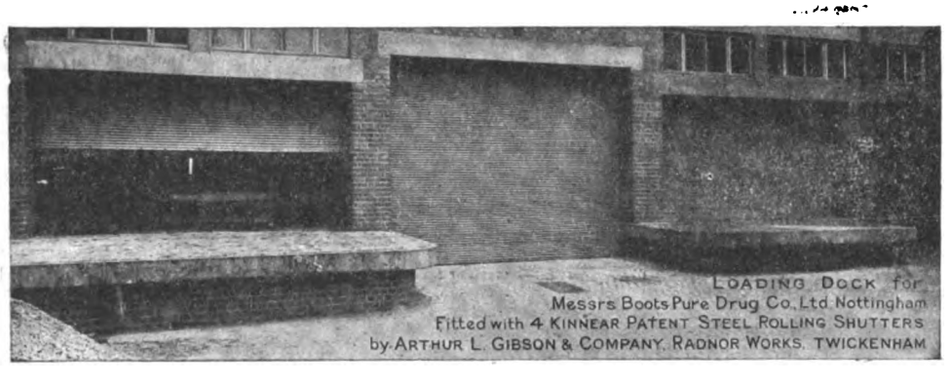
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a man with five daughters, all earning wages, who want the same, particularly as one daughter is consumptive. But these cannot be catered for, for no one can build a four-bedroom, parlour, kitchen and scullery house, with bath, &c., and garden at 9*s.* a week, exclusive of rates, at the prices which will be current for many years to come, and even with early 1914 prices. And yet these are cases with claims.

It also prevents a society averaging its risks by building, say, 200 cottages at rents from 5*s.* 6*d.* to 9*s.*, which are cut very fine, and also building a score of better-class cottages which show a better margin.

(7) The usual term of repayment, now thirty years, is absurdly short, with so large a margin as one-third of the value in hand. If you have it for forty years, you have to pay ¼ per cent. more interest.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

New and Cheap Building Materials for Cottages.

SIR,—In a recent issue you published a paper read at the National Housing Congress by Mr. H. L. Paterson, F.R.I.B.A., on the above subject, in which it was stated that "it is a common experience for an architect to be called in to advise about a damp wall covered with stucco."

My business brings me many letters confirming this remark. I do not receive so many complaints of damp walls which have been finished with plain stucco as of walls which have been roughcast or pebble dashed.

Smooth stucco presents a better surface to the weather and is not so liable to crack and craze, especially when it is finished with a wood float instead of a steel trowel. There is no better tool than a steel trowel for flat roofs, tanks, and stoke-holes, where a dense, smooth finish is desirable. It is, however, the worst tool for exterior walls. A granular surface is given if a wood float is used, and it is more artistic than the metallic, smooth surface which is left from a steel trowel.

The author of the paper also referred to cavity walls. The demerits of cavity walls are numerous. Any condensed moisture and rain (which is driven through the outer 4½-inch wall) keeps the door and window heads damp, and there are difficulties in dealing with the solid reveals. They are also costly.

A granular-faced stucco is certainly cheaper than a cavity wall with its extra 4½ inches of brickwork, and there is no harbour for vermin. It is also perfectly damp proof if (as Mr. Paterson, the reader of the paper advises) waterproofed cement is used.—Yours, &c.,

J. H. KERNER-GREENWOOD.

THE Wigan Town Council, at its quarterly meeting, sanctioned the borrowing of £53,920 for the extension of the electricity undertaking, on the basis of a scheme planned by Mr. H. Dickinson, city electrical engineer, Liverpool.

A BUST in bronze of Cardinal Newman has been set up in the gardens of Trinity College, Oxford. It is placed under the rooms occupied by his tutor, "Tommy" Short, and looks towards Wadham College. On one side of the bust there is the note, "A. Broadbent, sculptor, 1915," and on the other, "Presented by D. La Motte, Esq., M.A." The pedestal, which is of stone, bears the inscription, "John Henry, Cardinal Newman, 1801-1890." The Cardinal is represented bare-headed.

PROFESSOR BERESFORD PITE, F.R.I.B.A., delivered on Monday last the first of a course of five lectures at the L.C.C. School of Building, Ferndale Road, Brixton, S.W., on "Town Planning and Architecture." The remaining lectures will be given on successive Mondays. They will be illustrated by the lantern, and specially prepared views will be shown. Admission is free to students and the public generally.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

DEVON.
Sutcombe.—Parish church: restoration. Mr. Harbottle Reed, F.R.I.B.A., 12 Castle Street, Exeter.

DURHAM.
Hebburn.—R.C. School, Argyle Street: proposed addition.
Pity-Me.—Wesleyan Chapel: addition.
Quarrington Hill.—Twenty-six houses, for Walter Scott, Ltd.

ESSEX.
Upminster.—Two houses, Champion Road, for Messrs. W. P. Griggs & Co., Ltd.

GLOUCESTERSHIRE.
Avonmouth.—Proposed nineteen houses, King Street, for Health Committee.
Bristol.—Premises, Regent Road, Bedminster, for the Imperial Tobacco Company.

KENT.
Crayford.—Proposed Chapel of Ease.

LANCASHIRE.
Burnley.—"Woodfield House": alterations, &c., as a Maternity and Child Welfare Centre for the T.C. (£2,900).
Golborne.—Proposed R.C. Church, High Street.
Haslingden.—Britannia Mill: extension for Messrs. Anderton & Halstead.
Cams Mill: addition for Messrs. J. W. Mitchell, Ltd.
Premises, Baxenden: additions for Messrs. Harding, McMyn & Co., Ltd.
Lancaster.—Eight houses, Westbourne Road: Messrs. Thompson & Morris, builders, 13 Dalton Square.
Westhoughton.—Forty-one Council houses, Lord Street and off Church Street.

NORTHUMBERLAND.
Newcastle-on-Tyne.—Proposed St. Jude's Vicarage (£1,200).
Scotswood.—Proposed U.M. Church.
Wallsend.—St. Luke's Sunday school, Neptune Bank.

NOTTINGHAMSHIRE.
Rainworth.—Council school.

SURREY.
Guildford.—No. 128 High Street: buildings for Mr. W. C. Spikins.
Pair of cottages. Shepherd's Lane, Stoughton, for the Governors of Trinity Hospital.
Pair of cottages, Aldershot Road. Messrs. Tribe & Robinson, builders, Onslow Street.
Works, Woodbridge Hill: addition for Messrs. Dennis Brothers.

SUSSEX.
Eastbourne.—Cottage Home, Dacre Street: addition. Mr. F. G. Cooke, architect, 2 Hyde Gardens; also
"Hill Brow," Bolsover Road: addition.
"Carlton Lodge," Devonshire Place: addition. Mr. S. Box, A.R.I.B.A., architect, 89A Terminus Road. Mr. F. E. Rayner, builder.
Two houses, Rotunda, St. Anthony's Hill. Mr. A. Ford, architect, 7 Gildredge Road. Mr. J. D. Thompson, builder, 21 Ceylon Place.

WARWICKSHIRE.
Berkswell.—Two shops and a house, Tile Hill, for Mr. J. G. Tommy (of Burton Green, Kenilworth).
Coleshill.—St. Gerard's Hospital: chapel for Rev. G. V. Hudson.
Corley Moor.—Children's Camp: additions for the Coventry Children's Care Committee.
Marston Green.—Billiard-room and Kitchen, for Mr. W. W. George.

YORKSHIRE.
Brierley.—Church Schools.
Dewsbury.—Parish Church, Hanging Heaton: rebuilding.
Halifax.—Skircoat tram depôt: extension (£2,700).
Harrogate.—Picture house, Cambridge Street, for the New Century Picture Co.
Huddersfield.—Works: extensions for British Dyes, Ltd.

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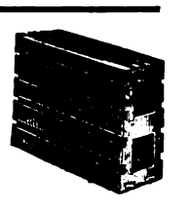
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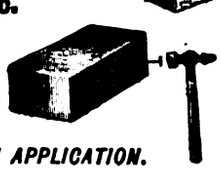
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ENGLAND.—*continued.*

YORKSHIRE.—*continued.*

Knottingley.—Twenty-four Council houses, Mill Lane (£5,000).

Selby.—Proposed one hundred cottages for U.D.C.

Shelf.—Buildings, South Lane: alterations for Mr. J. Bottomley.

WALES.

Treorchy.—Business premises, stables, &c., Cwmparc. Mr. W. D. Morgan, architect, 194 Ystrad Road, Pentre.

SCOTLAND.

Dundee.—Office, Strathmartine Road: addition and alterations for Messrs. T. Muir, Son & Patton, Ltd.
Villa, Osborne Place: alterations for Sir J. Urquhart.
Villa, Arygle Street: additions for Mr. James Smith.
Workshop and offices, Bellfield Street, for Messrs. Urquhart, Lindsay & Co., Ltd.

Glasgow.—R.C. Cathedral, Great Clyde Street: alterations.
Buildings, Garngadhill, for the Tharsis Sulphur and Copper Co., Ltd.
Buildings, Barron Street and North Canal Bank Street, for Messrs. Redpath, Brown & Co., Ltd.
Offices, &c., and workshop, Linthouse, for Messrs. Alex. Stephen & Sons, Ltd.

Greenock.—No. 5 West Stuart Street: proposed alterations for Messrs. J. Mitchell & Sons.

Irvine.—Factory, Ayr Road: extension for Mr. A. Cunningham.
Music Hall, Montgomery Street (£4,000), for the Scottish Kinemas, Ltd.

St. Andrews.—Tea-rooms, the West Sands, for Mrs. Coull.

IRELAND.

Belfast.—Shipbuilding Works, Queen's Island: extensions for Messrs. Harland & Wolff.

Cork.—Corrigan's Hotel, King Street: additions and alterations. Messrs Chillingworth & Levie, architects, 11 South Mall; also
Factory for Messrs. Dwyer & Co., Ltd. Messrs. J. Delany & Co., contractors, 25 Henry Street.

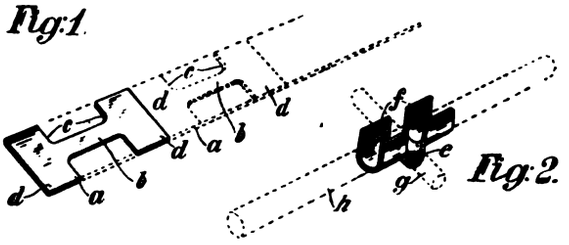
Wexford.—Nine labourers' cottages. Messrs. Donnelly & Moore, engineers to R.D.C., 36 Nassau Street, Dublin.

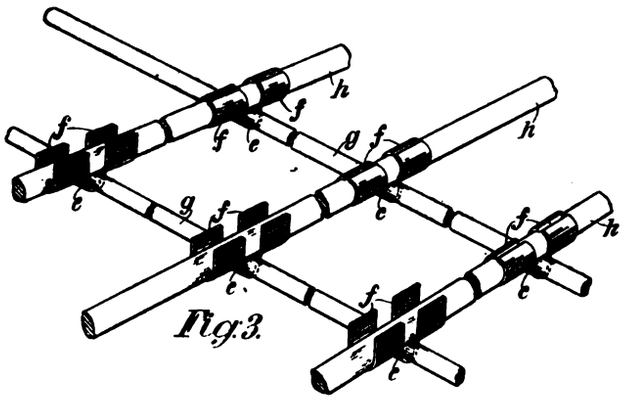
BRITISH PATENT SPECIFICATION.

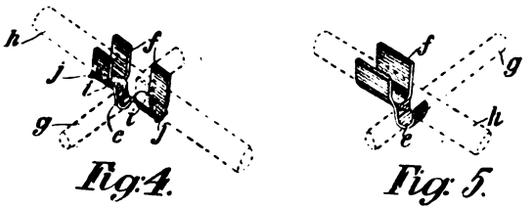
Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 4,803. March 27, 1915.—An improved device for securely fastening two bars or rods at an angle to each other, W. R. Kerr and W. H. Murphy, trading as the "K.M." Concrete Steel Company, of National Mutual Buildings, corner of Collins and Queen Streets, Melbourne, Victoria, Australia, reinforced concrete specialists. This invention relates to clips adapted for use in reinforced concrete construction for securely fastening two bars or rods at an angle to each other (usually a right angle). Fig. 1 is a view in perspective showing a blank from which the improved clip is formed. Fig. 2 is a view in perspective of the finished clip. Fig. 3 is a view in perspective, and shows the manner of employing the clip to securely connect rods placed at right angles. Figs. 4 and 5 are similar views showing modifications in the construction of the improved clip. The letter a designates a sheet-metal blank which is made in the form of the letter "H" by stamping out of hoop-iron or sheet-metal as shown in fig. 1. The end parts of that portion b of the blank which correspond to the bar in the letter "H" are made broader than the central part or are rounded as at c to ensure a desired degree of strength and to prevent the metal tearing at these parts when the blanks are being shaped. The blank a is placed in shaping dies (not shown), which form the bar portion b and also the leg portions d into U-shaped loops e and f respectively. The loop e formed in the bar b is disposed at an angle to the loops f made in the leg portions d, and the first-mentioned loop is made to accommodate a bar g, and the second-mentioned loops f are arranged to receive a bar h placed at a right or other desired angle thereto. When the bars g and h are in the positions above stated the ends of the second-mentioned loops f are bent tightly over the bar h engaged by the same, thereby securely fastening the two bars to each other. The improved device will be found particularly useful for connecting light spacing or distributing bars to tension or compression bars to make a reinforcing mesh, as shown in fig. 3, of regular formation which can be used in a variety of ways to reinforce concrete construction. In fig. 3 three tension or compression bars h are shown connected by clips to a distributing bar g, and other clips are shown in position for clamping the bars h to a second distributing-bar. In a modified form of the invention one of the loops f engaging the second-mentioned







bar h can be dispensed with, in which case the device is formed out of tee-shaped blanks, and is otherwise shaped as hereinbefore described (see fig. 5). The clip can also be made in two or more parts, as shown in fig. 4, which can be made to overlap or interlock each other when the clip is being forced tightly on the bars. In this form of clip the central part b is formed into a loop e having laterally projecting portions i which are engaged by the separately formed loops f. The ends of the laterally projecting portions i can be bent downwardly as shown at j to ensure the part of the clips remaining in position when a strain is placed upon the bars. April 5, 1916.

SIR HIRAM MAXIM has accepted the invitation of the Aeronautical Institute of Great Britain to become its first President. The Institute is the youngest of our aeronautical bodies, having been formed on September 30 last at a meeting presided over by Sir William M. Ramsay, and its undertakings for the last six months have been numerous and its energy untiring. Through the presidency of Sir Hiram Maxim the Institute will be able to link up the admirable aeronautical work of that eminent pioneer with its present activities and future efforts.

QUARTERMASTER SERGEANT-INSTRUCTOR E. HANDLEY-READ, of the Machine-gun Corps and late of the Artists' Rifles, has just completed a large series of water-colour drawings depicting the trenches and scenes familiar to our men in the British firing-line. They are drawn with great accuracy of detail, and the artist has been helped by minute descriptions and material supplied to him by officers in different sections of the Front. His intimate pre-war knowledge of France and Flanders has also been of much assistance in rendering the local colour of the spots he has painted. An exhibition of these pictures is to be opened on May 12 at the Leicester Galleries, Leicester Square, and should have a wide appeal just now.

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FORTHCOMING EVENTS.

Friday, May 19.

Second Main Conference on Arterial Roads in Greater London to be held at the Guildhall, Westminster, S.W., at 11 A.M.

Thursday, May 25.

Institution of Municipal Engineers: Eastern and North-Eastern Districts' Meeting at Norwich.

Friday, May 26.

Town Planning Institute: Second Annual General Meeting at 92 Victoria Street, S.W. Adjourned discussion on papers by Messrs. Aldridge and Shawcross on "The Town Planning Proposals of the Urban Land Report," at 5.45 P.M.

ARCHITECTURE AT THE ROYAL ACADEMY.—III.

IN point of numbers domestic architecture bulks more largely than any other division, and in quality we may say that this year's show maintains the high level of attainment characteristic of modern English architecture in domestic design.

Following the catalogue order, "House at Fernhurst, Surrey," by Mr. J. Percy Hall, shows an admirable result gained by the thoughtful use of simple materials, white plaster with the modern sloping buttress, dear to garden suburb designers, wide spread timber framing on the upper storey with a balcony on timber posts, the whole crowned with red tile roofs.

Excellent examples of official architecture are the Government buildings for the "British Legation, Cettinje," and the "British Legation, Stockholm," by Mr. Richard J. Allison, the present chief architect of His Majesty's Office of Works. The former is a simple and dignified building of renaissance character with red Roman or pantile roof and big eaves, whilst the Stockholm example is treated with somewhat fuller detail, high pantile roof with big eaves also and a first floor balcony with iron railing, which also throws a deep shadow. Apparently, from the water colour of Mr. Palmer Jones, these buildings are to be faced with cement, stone dressings being added in the case of the Stockholm Legation.

Mr. Leonard Stokes is represented this year only by a sketch perspective of "Lord Mayor Treloar Cripples' Hospital and College," a long drawn group of low buildings, symmetrically arranged, save as influenced by the slope of the ground, which at the lower end transforms the basement into a ground floor. Hanging near by, "The ball-room in a country house," by Mr. Arthur Ed. Harvey, is a study in renaissance panelled walls with a deep cove and an elaborate plaster ceiling, coldly academic and formal. Clearly it is not intended for a Bohemian.

A good instance of the "square house" symmetrically disposed—externally—is Mr. Basil Oliver's "House at Pyrford, Surrey," shown by plans and elevations. The plan is clever in its economy of passages and provision of cupboards for the lady client, but the one stair with many winders necessitated by the placing of a central front entrance beneath it, is scarcely worthy of the house.

"White Lodge, Portishead," by Mr. W. Henry White, is somewhat more than a lodge, whilst its white walls are as indicated by the water-colour drawing considerably broken up with coloured stone in the two-storeyed entrance bay and parts of the ground floor, by the half timber work above and the red tile roof. There is, in fact, plenty of colour in the house and rather much breaking-up of surface with bays, gables, and other features.

A charming piece of composition is "Weston Acres," Woodmansterne, by Mr. Sidney J. Tatchell, with its long simple roof over an informally disposed but exquisitely balanced façade, with a gable at one end, a bay at the other, and an external chimney stack between. White rough cast walls, brick plinth, quoins, and chimneys, stone dressings to windows, and a brown tile roof, make up a colour scheme which, with a formal garden in front, is well rendered in a good water-colour drawing. Mr. Hubert M. Fairweather's "House at Ilford" has for its chief claim to consideration a lily pond with pedestal and bronze figure in front of the doorway, which is of a good renaissance type. Mr. W. Ralph Low's "Bank at Esher," but for its big bank door, is an ordinary dwelling house in gray plaster with red brick trimmings and a high roof.

An old mill or an oast house always makes a good foundation for an artistically picturesque house in the hands of a capable designer, and in "The Old Mill, Frimley, Surrey," Mr. H. Reginald Poulter has made full use of the opportunity. A timber string course at first floor level not only ties the building together, but justifies the timber posts of the porch, whilst the white walls, big tile roofs, and red brick chimney stacks combine with the circular tower-like body of the old mill to make a satisfactory composition. Mr. Poulter's second design, "The Maultway House, Camberley," is of quite different type, a symmetrical red brick Georgian house, with stone entrance doorway and tile roof.

Typical of the designers' work is the "House at Haslemere," by Messrs. Gerald Unsworth & Inigo Triggs, a large Tudor manor house in red brick and diaper with many gables and gabled dormers, cut brick chimney stacks and mullioned and transomed windows. The "Stables at 'Fairview,' Coombe Warren," by Messrs. Harold Bailey & Douglas Wood, rely for character on Dutch gables and blue outside shutters, a pleasing variant on the usual.

The thorough grasp of the Cotswold feeling possessed by Mr. A. N. Prentice is well exemplified in his perspective of a "Proposed Country House," in the design of which much play is made of two-storeyed gables and dormers, contrasting with broad windowless surfaces of grey stone and stone slate roofs. Something of the Flemish cachet often pervading our early sixteenth century renaissance work is to be seen in Mr. George J. Skipper's "Sennowe Park: Ryburgh Gates," an example of the twin lodge type of park entrance, with elaborate wrought-iron gates and piers between, an ostentatious display quite justifiable on occasion.

Mr. Morley Horder has two works in the exhibition this year. "Mallory Court, Warwickshire," is a big straggling house having white walls with stone dressings, tall brick chimneys and tile roofs, picturesque rather than dignified. The "House at Minehead, Somerset," is more symmetrical in grouping, Tudor in detail, and

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as befits the locality, built of stone with blue slate roofs. "Westergate Wood, Sussex," by Messrs. E. S. Coldwell & J. S. Courtauld, is an example of the symmetrical main block with a tail that often obtains in modern houses; the elevation with its seventeenth century gables loses attractiveness from the dirty colouring of the drawing.

A square town house of Georgian type with a piano nobile, green shutters, and mansard roof is "No. 1 Buckingham Street, Westminster," by Mr. L. Stanley Crosbie. A "House at Enfield, Middlesex," by Messrs. Alfred L. Hart & P. Leslie Waterhouse, has a symmetrical front with additions. Plastered walls, bays, and a quaint angle oriel combine with high chimneys and gables to introduce an element of the picturesque.

Messrs. Tubbs, Messer & Poulter show two of their characteristic domestic designs, a "House at Beaulieu" and "Sefton," Weybridge, Surrey, both with white walls, big tile roofs and weather boarding, admirable studies of well-balanced picturesqueness, and in the former splashes of brilliant red on vertical surfaces which may mean hung tiling. "Stabling at Zakoziel, Russia," by Mr. E. Turner Powell, has afforded the designer an opportunity of which full advantage has been taken with a big riding school at one end and a long range of loose boxes and houses for coachmen and gamekeeper. A massive piece of carpentry framing forms the entrance with balcony over to the riding school, and is the emphatic note of the design in contrast with red brick and tile roofs.

That effective architecture can be made out of cottages without undue extravagance is shown by Messrs. Halliday, Paterson & Agate in their "Premiated Design: group of five cottages, Bromboro' Port," where an excellent symmetrical composition is built up of gabled ends and gable-dormered bays projecting from the main line of walling, which enables a long straight ridge to be carried through. Thus the grouping is satisfactorily conceived on the basis of a simple structural form, and no extraneous ornamental detail is required to give fictitious interest.

NOTES AND COMMENTS.

THE suggestion made by the Lord Mayor of London and other influential signatories to an appeal that a national war memorial should take the form of a central Veterans' Club, whilst embracing an idea that is worthy of fulfilment, can hardly be expected to entirely abrogate the erection of smaller local memorials in stone and bronze of possibly unfortunate conception such as, following the Crimean and South African wars, have flooded the country with memorials of which we should now be glad to be relieved. The personal individualistic instinct for separate remembrance militates against the general acceptance of the far preferable class of memorials containing a fine idea and a civic use, for the benefit of those who survive as well as memorials of those who have fallen. But worthy recognition of the great departed is more readily possible by the concentration of effort in really worthy schemes than in the multiplication of indifferent or even worse small individual or local memorials.

In the Irish daily press numerous suggestions are being made by correspondents for the improvement of the areas which have been laid waste in the abortive rebellion. Some of the suggestions are worthy of consideration, others are merely whimsical; but this view at least should prevail, that the opportunity should be taken for reconstruction on a definitely ordered plan in place of a haphazard rebuilding on the old lines.

Dealing in antiquities is not all profit and has its risks. Mr. W. M. Voynich, antiquarian book dealer, suspecting that certain books he had purchased in America had been stolen from Lincoln Cathedral library, wrote to the Dean; and, in an action before Mr. Justice Ridley in the King's Bench Division, the evidence seemed conclusive that the books in Mr. Voynich's possession had been so stolen. Mr. C. J. Conway, for the defence, gave an interesting account of the books and produced them. He said that there was one volume, containing four books. The first of these, "Expositio Sequentiarum secundum usum Sarum," was printed about 1495. The manuscript was given by the Catholic authorities to an English printer to print. He sent it to Cologne to be printed, and the printer there, who had printed an "Expositio Sequentiarum," returned the book, which, it was discovered, was not a replica of the manuscript. Therefore the second part in the disputed volume was an appendix printed by the English printer, correcting the German printer's mistakes. The third part of the volume, "Expositio Hymnorum secundum usum Sarum," was also sent to Cologne by the English printer, who discovered errors in it, and printed an appendix in England, which formed the fourth part of the volume. Mr. Conway added that his client's intention had been to present the volume to the British Museum, but he was prepared to give it up to the Cathedral authorities if the latter would pay the costs of the proceedings. Deliberations between counsel and their clients resulted in the defendant agreeing to give up the volume to the plaintiffs, either side to pay its own costs. Mr. Bevan, on behalf of the Dean and Chapter, paid a tribute to the generosity of Mr. Voynich, and acknowledged their indebtedness to him for having drawn their attention to the matter, and, after a remark from the Judge that the defendant had acted very fairly and honestly, the record of the proceedings was withdrawn.

The past eighteen months, and more particularly the last half-year, have seen inroads made upon the woodlands of this country to an extent altogether unprecedented, and, in some districts, in such a fashion as to cause serious doubt regarding the economic wisdom of proceeding with wholesale felling without making certain that sufficient tree-planting is being done to secure the future maintenance of the forests in an unimpoverished state.

Prior to the state of affairs created by war conditions, the thinning out of forests, even to a degree essential to the proper development of the woodlands, was a task which in many cases gave the proprietor—if he was of the short-sighted and purely commercial minded type—cause to pause in ordering the wielding of the axe. Prices of home-grown timber were at one time so low as to barely pay for the cost of felling and railway cartage. Now, however, the enormous rise in the price of timber has induced proprietors not only to thin out their wooded lands, but in some cases to raze entirely considerable areas of trees. Thus, not only are they obliterating the picturesque and æsthetic aspect of the countryside, but they seem to forget that forestry is a form of soil utilisation in a manner identical to agriculture, and that if they do not make good the wastage by sufficient planting of young trees serious economic consequences will follow. The official State attitude towards forestry, it has often been complained, has been one of indifference, although in recent years legislation has been introduced which gave occasion for hope. In the present time of national awakening surely the authorities may be looked to not only to materially develop the home forestry resources, but also to safeguard the future of afforestation by putting a limit upon the extent to which woodlands may be thinned, and ensuring that the ripe trees felled and sold shall be replaced by a sufficient number of saplings.

In a series of articles in the "Birmingham Daily Post" on the Sale bequest to Worcester of English water-colours, reference is made to Samuel Prout's

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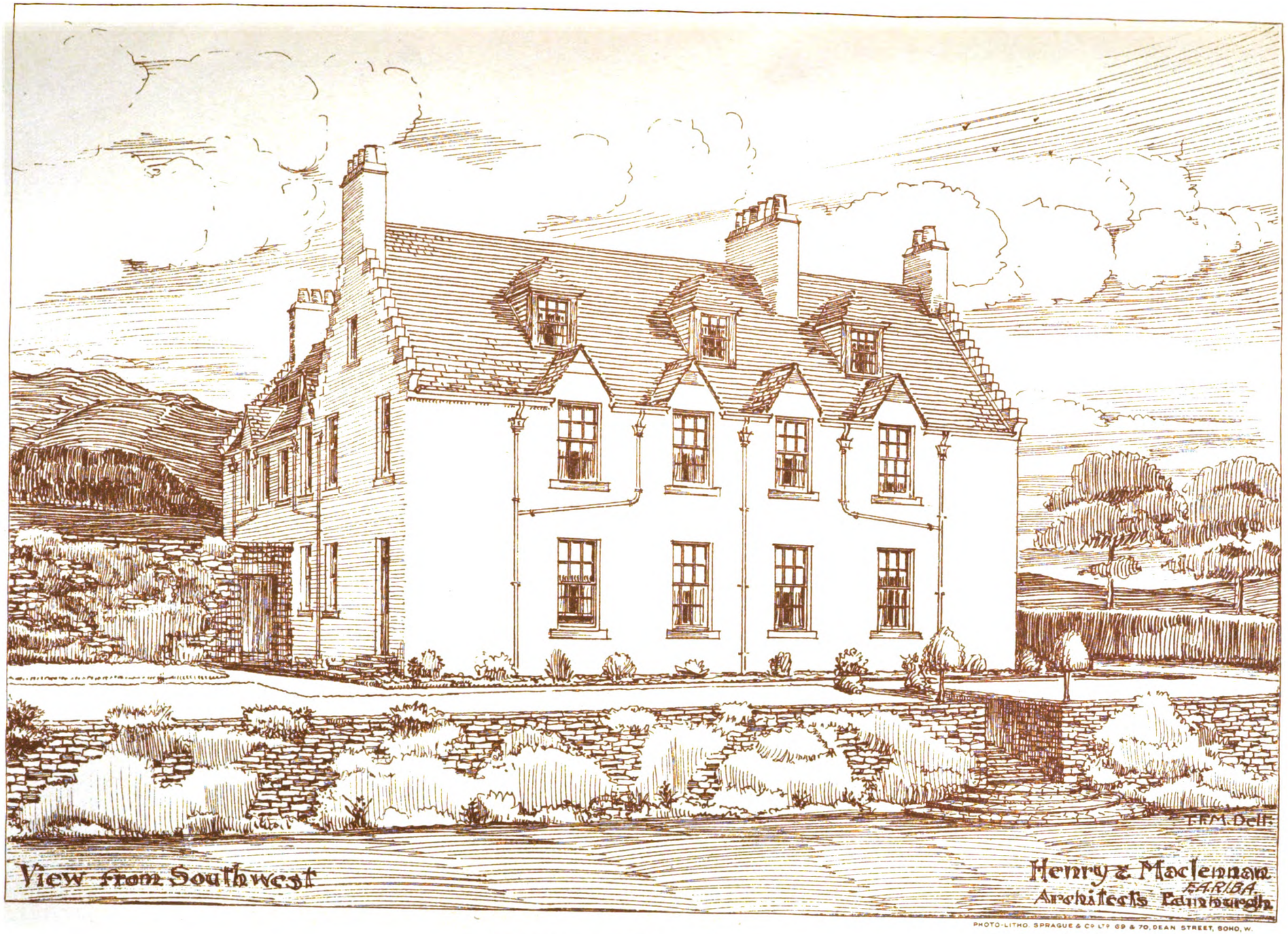


PHOTO-LITHO. SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.

"CHESTERKNOWES," ROXBURGHSHIRE.

Messrs. HENRY & MACLENNAN, Architects.

(Royal Scottish Academy, 1915.)

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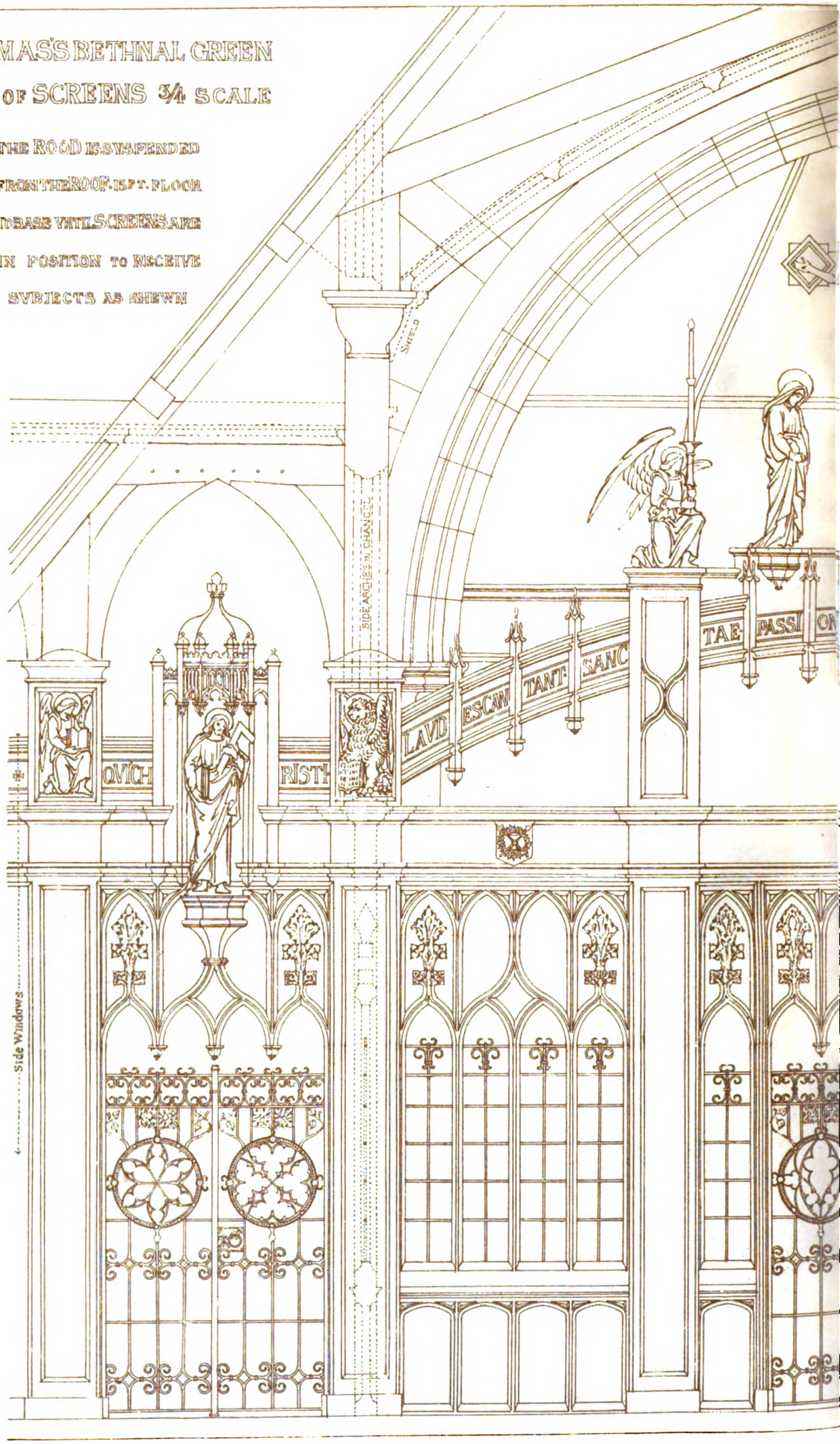
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S. THOMAS'S BETHNAL GREEN

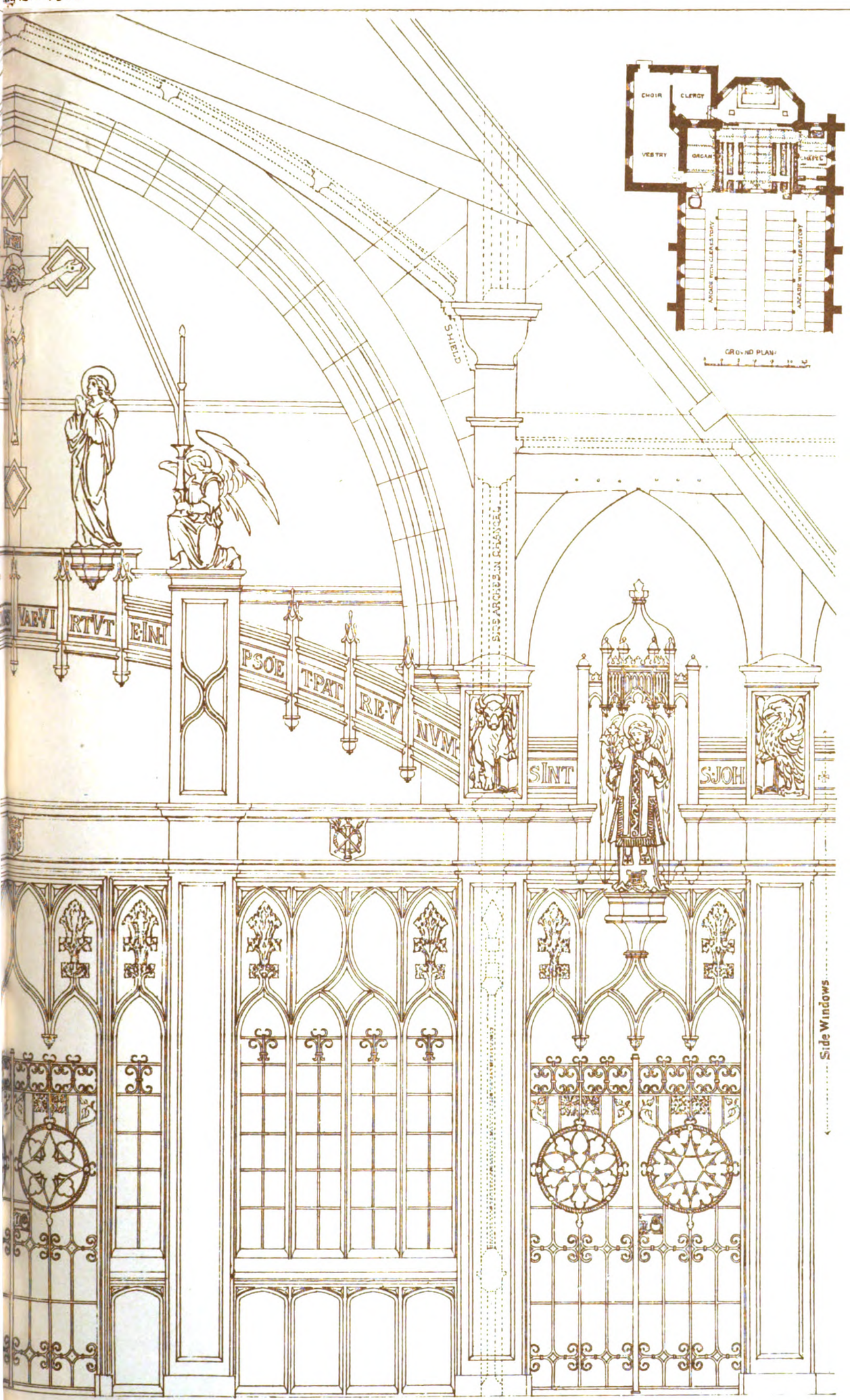
DETAIL OF SCREENS 3/4 SCALE

THE ROOD IS SUSPENDED FROM THE ROOF. 15 FT. FLOOR TO BASE UNTIL SCREENS ARE IN POSITION TO RECEIVE SUBJECTS AS SHEWN



ORGAN STALLS

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John C. Lee MARCH 1916

STALLS CHAPEL

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PHOTO-LITHO SPRAGUE & CO LTD 69 & 70 DEAN STREET SOHO W

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figures, which are admirably introduced, never doing anything out of the ordinary. They may appear to be conversing without heat or conviction upon entirely uncontroversial subjects. They may bargain, ungraspingly, for a fish or a melon, or they may sit about gracefully doing nothing in the style of Holland's sleeping female—but not so as, like her, to bid for too much attention. They seem to practise a deportment such as is suitable to show off architecture like so many unobtrusive Turveydrops of both sexes, but hardly ever do they seem to be genuinely alive.

Amongst the destruction in Dublin is included the home of the Royal Hibernian Academy, in which the annual exhibition was being held, and thus some five hundred pictures were destroyed. But of more consequence is the irreparable loss sustained by the Academy in the destruction of its permanent collection, which included some very valuable miniatures, a collection of prints, among which were four books of etchings by Goyez, presented by the Spanish Government to the Academy soon after the artist's death, and portraits of past Presidents and Academicians. The handsome old furniture which graced the Council room has also been consumed, while records and the valuable and extensive library, which contained many books out of print, are lost. The President's chain and a few other small objects have been saved.

"English Mural Monuments and Tombstones of the Seventeenth and Eighteenth Centuries" is the title of a book which Messrs. Batsford will publish this month. The volume will contain numerous reproductions of photographs to a large scale, specially taken under the direction of Mr. Herbert Batsford in various parts of the country, with the intention that they should be representative of the best work of the period and form a source of inspiration for the present time. Mr. Walter H. Godfrey, architect, F.S.A., has written an introduction and notes to the photographs.

ILLUSTRATIONS.

ROOD SCREEN, ST. THOMAS'S CHURCH, BETHNAL GREEN.

THE scheme suggests a chancel with chapel on the south and an organ on the north, each divided from the chancel by two arches with clerestory over, filled in with traceried screens similar to the main screen under the three arched roof principals, instead of under a single arch span as at present.

The existing nave occupies the whole width of the church, but it is hoped will in the future have aisles as shown, divided off by an arcade and clerestory similar to that proposed for the chancel. At present only the rood with its three figures on a beam in gold and colour is in position. These were carried out last year from the architect's models under the supervision of Mr. James Egan, who was for many years associated with Burne-Jones and W. Morris. In the segmental arch over the main screen is a chronogram giving the date by numerals associated with the late Vicar, the text of which is adapted from "Our Lord's Prayer for Unity." Flanking the three figures of the rood on each side is a kneeling angel holding a light. At the end of the organ is the canopied and niched figure of St. Thomas with its emblem. This is supported by the emblems of the Evangelists, viz., St. Matthew and St. Mark. At the end of the chapel is the canopied and niched figure of St. Gabriel with its emblem, and supported by the other emblems of the Evangelists, viz., St. Luke and St. John.

The compartments of the screen have ornamental stancheons with scroll work in metal. The six gates to chancel, organ, and vestry, and to chapel will also be in metal with varied devices to each, which will stand open during Divine Service.

The altar itself with riddels, &c., already has the necessary appointments.

The church as it now exists is low in proportion to its span of 43 feet. It was therefore necessary to demonstrate by models in the church itself before the dedication last year that the general proportion of the interior will be transformed and improved by the alterations, and also to avoid the frequent mistake of putting up figures which are more often than not out of scale. The rood was carried out by Messrs. Burns & Oates, of Orchard Street, W.

LANGSIDE DISTRICT LIBRARY.

THE design, which was in last year's Royal Scottish Academy, was placed third in an open competition when over one hundred drawings were submitted. The assessor was Mr. Alexander N. Paterson, A.R.S.A., F.R.I.B.A. In working out the scheme the architect, Mr. A. Graham Henderson, attempted to give a logical expression of the plan, which, in its essential arrangements, did not lend itself to an absolutely symmetrical treatment. With the exception that the conditions made it necessary to be readily changeable to an "open access" system as an experiment, the plan is on similar lines to that of other Glasgow district libraries.

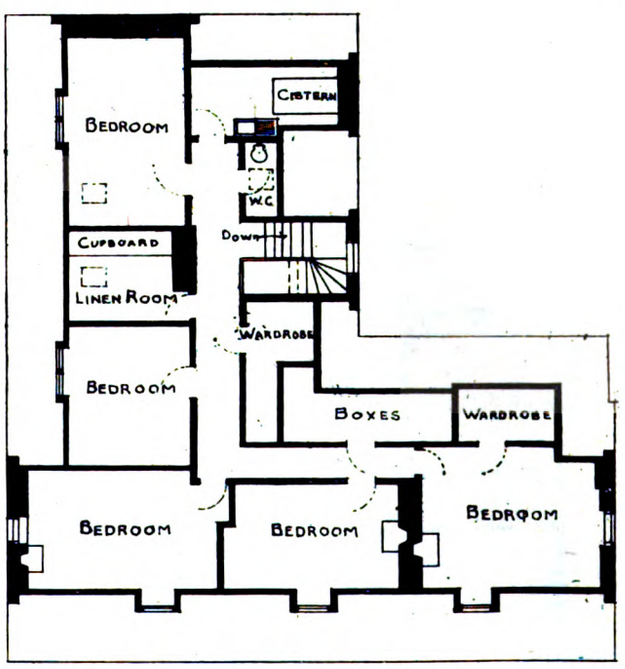
OXFORD COLLEGE SERIES.—NOS. 160 & 161.—UNIVERSITY COLLEGE ENTRANCE AND FIREPLACE IN DINING HALL.

THIS week we illustrate some details of University College in our series of views.

CHESTERKNOWES, ROXBURGHSHIRE.

THIS house, perspective views of which were exhibited in last year's Royal Scottish Academy, was built for Captain Mark Sprot, of Riddell.

The walls are of hollow brick harled. Very little dressed stonework was applied, and it was executed only on the crow-step gables, at the porch and on the window-sills, which are of red sandstone obtained from Locherbriggs, Dumfriesshire. The electric lighting is on the Lister Bruston automatic system, the whole of the plant and lighting arrangements being supplied by Messrs. James Gray & Son, Edinburgh.

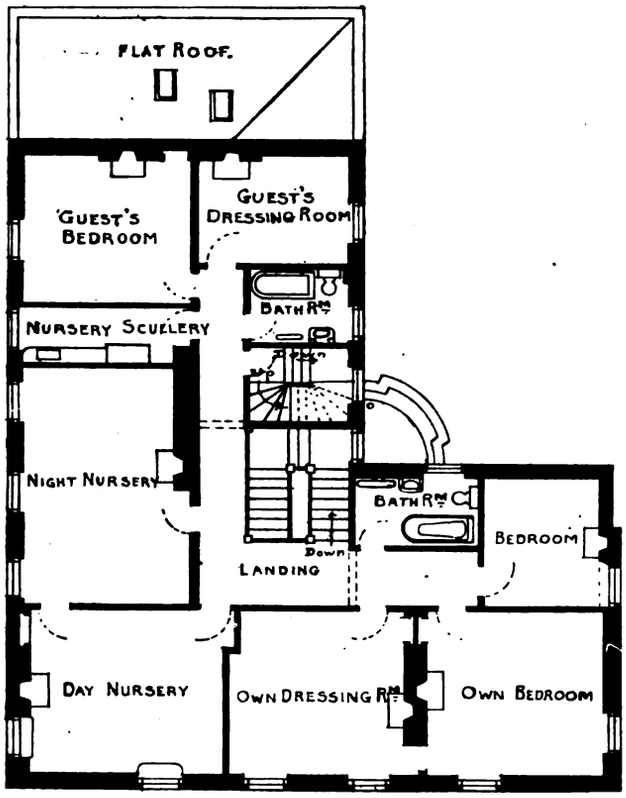


ATTIC FLOOR.

Messrs. Henry & Maclennan, F. and A.R.I.B.A., were the architects, and the general contractor was Mr. William Scott, of High Street, Galashiels, who did the joinery work. The following firms of sub-contractors

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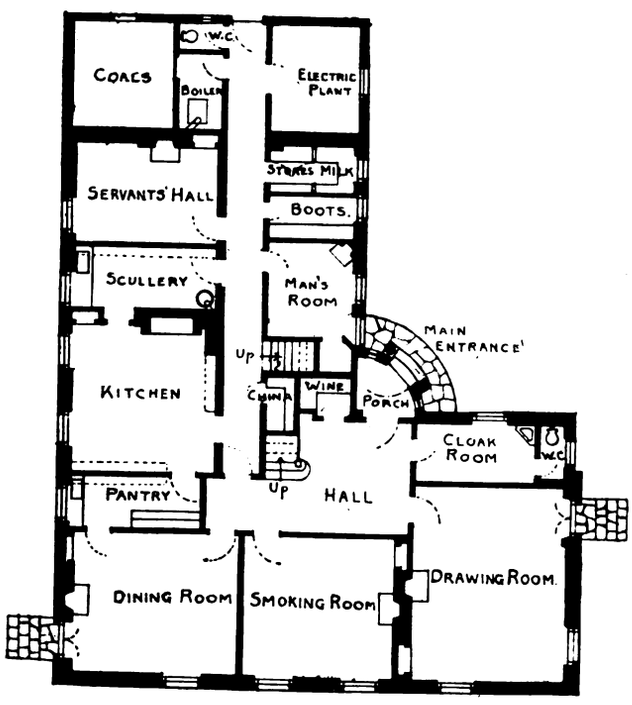
were employed:—Messrs. William Nichol & Son, St. Boswells, who were responsible for the masonry; Mr. L. Grandison, Peebles, plastering; Messrs. L. McLaren &



FIRST FLOOR.

Sons, Galashiels, slating; Messrs. W. G. Walker & Sons, Duff Street, Edinburgh, asphalte work; and the

CHESTERKNOWES



GROUND FLOOR

glazier work and painting was done by Messrs. J. G. Lindsay & Son, of Galashiels.

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—XX.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

THE writer, so far as concerned his immediate association with the church architecture of Venice, was, in the selection of his headquarters, particularly fortunate, on the one hand, in having almost immediately opposite in the view over the Grand Canal the strikingly beautiful plague-church of Santa Maria della Salute, and to the east that delightful Palladian church of San Giorgio Maggiore, with its stately campanile; but, on the other hand, he was equally unfortunate in having situated immediately at the rear the church of San Moise.

In all the excursions undertaken on foot, the Campo San Moise had to be crossed in order to enter the narrow little Salizzada San Moise, giving access to the Piazza San Marco, or, in fact, to proceed in any other direction. Every time this church of San Moise had to be passed. Its façade is surely the ugliest thing ever designed, and is without a single redeeming feature. Yet it has been said by someone that it is "a fantastic but highly picturesque baroque façade"; it is therefore impossible to account for tastes. Ruskin describes it as "notable as one of the basest examples of the basest school of the Renaissance." Designed by Al Tremignano in 1668, it is at least satisfactory to know that this architect did not have a large practice.

Next to the Piazza, the Grand Canal is the great attraction of Venice, and provides many opportunities for studying the varying moods in the history of this great city.

It is better for convenient sequence to take the course of the Canal, rather than that of architectural periods or styles, particularly so if time is limited.

The Grand Canal, or Canalazzo, is the main artery of the Venetian traffic, originally one of the number of fairly deep navigable waterways by means of which the waters of the rivers find their way past the Porti of the Lidi into the open Adriatic. This canal is two miles long and about 77 yards in average width, and has a depth of about 17 feet. It is the original main highway, as it were, called at one time "rivo alto," the creator of Venice, and by means of which the great commerce reached the city in the olden days of her splendour. This famous waterway divides the city into two complete parts by intersecting it from north-west to south-east, and forming a curve very much resembling an inverted letter S. The Grand Canal is crossed by three bridges, the Ponte di Ferro, the Ponte di Rialto, and the Ponte alla Stazione. It is a thoroughfare unrivalled in the whole world, adorned with some 200 ancient palaces, mostly dating from the fourteenth to the eighteenth centuries, and a number of churches.

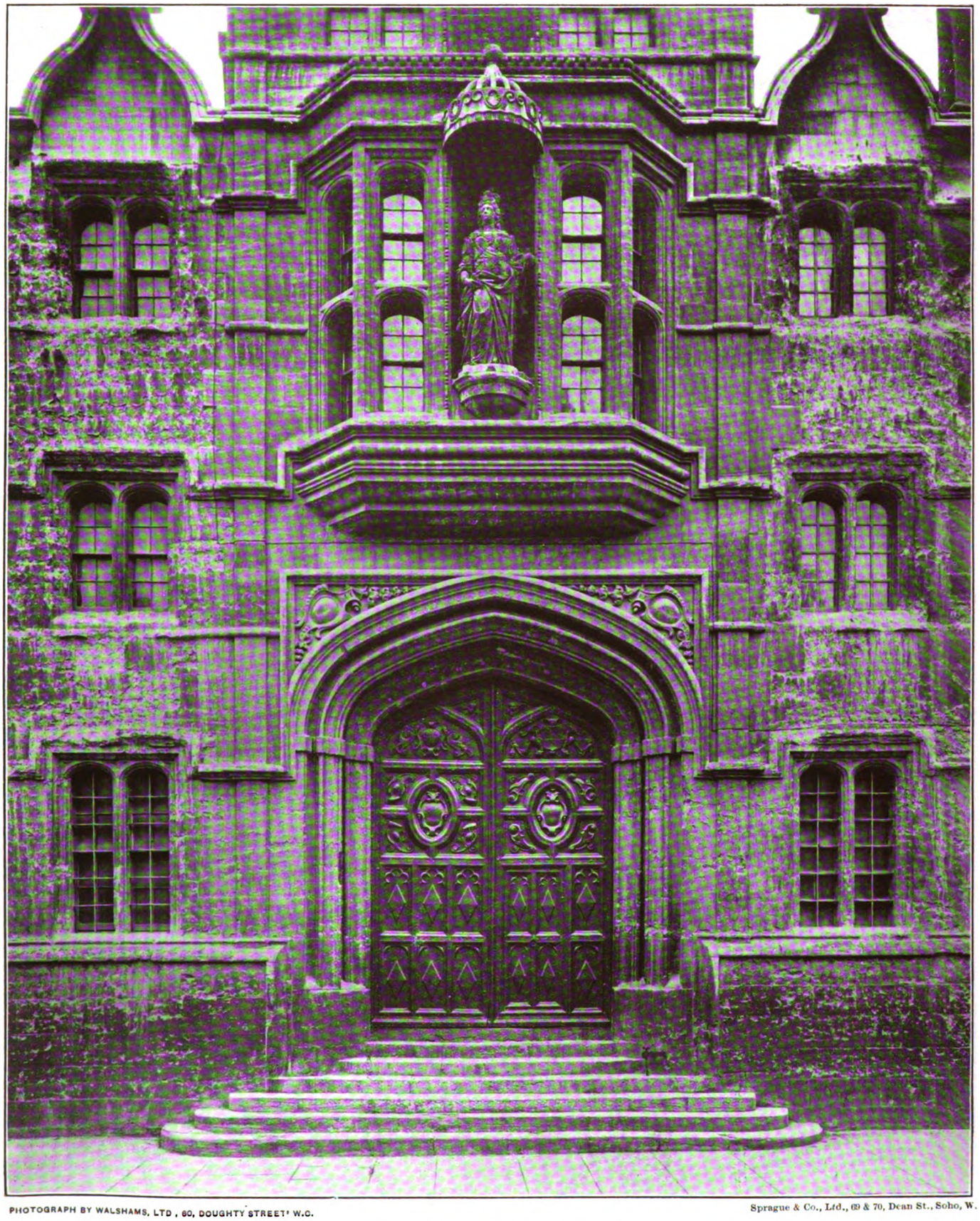
A trip in a gondola up one side of this silent highway and down the other (divided into at least two excursions) reveals fresh beauties at every bend in the canal.

Starting from the left-hand side immediately opposite the headquarters of the writer, the left bank is skirted, commencing at the Punta della Salute, the promontory dividing the Canal Grande from the Canal della Giudecca. The building upon the extreme point, and facing due east towards the sea is the Dogana di Mare, erected in 1676-82 by Guis Benoni, a Late Renaissance work not particularly picturesque, but rendered imposing and agreeable by its prominent position. This building is the principal Custom House. The comparatively low tower carries two Atlantes, and these bear a gilded globe surmounted by a bronze Fortuna, which acts as a vane, its sail turning with every change of the wind.

Passing the Seminario Patriarcale, recessed a little, close by, one arrives at the church of Santa Maria della Salute, which with the two buildings previously mentioned, stands upon an isosceles triangle-shaped island formed by the two main waterways, joined up by the narrow water street adjoining Santa Maria. This familiar edifice in all pictures of the entrance portal

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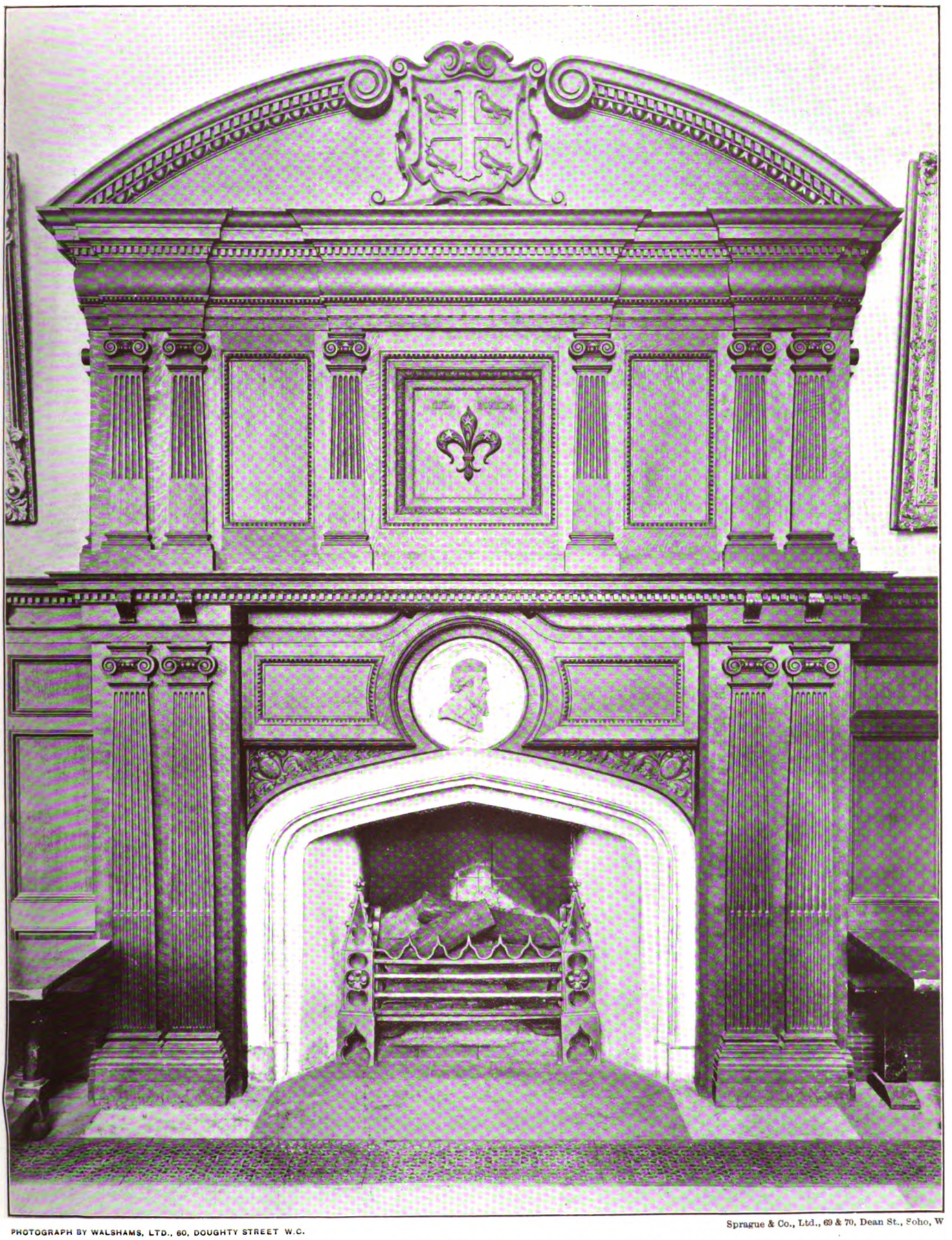


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OXFORD COLLEGE SERIES. NO. 161.—UNIVERSITY COLLEGE: FIREPLACE IN DINING HALL.

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to the city of the sea is probably the finest work of the late period in Venice. Architecturally, for its size, it has few if any rivals. A noble and picturesque pile, splendidly situate, and wonderfully effective from a distance, whether viewed from the west on the Grand Canal, from the east, entering the Canale di San Marco, or (the most effective perhaps of all) from the terrace at the corner of the Rio dei Baccaroli, on the right bank of the Grand Canal.

The three views are illustrated, the latter two with article XIX. and the first with article XIV.

The fine flight of broad steps leading from the waters of the canal adds dignity and beauty to the proportions of this striking pyramidical composition. Its principal dome springs from an octagonal drum pierced by sixteen semi-circular headed windows, and buttressed by bold brackets of no constructive value but exceedingly effective.

The principal dome has behind it, on the south side of the church, above the choir, a second dome of smaller dimensions, flanked by square twin campanili.

This church was designed by Baldassare Longhena, a pupil of Palladio, in commemoration of the cessation in 1630 of the great epidemic of the plague, when the city of Venice lost 46,000 of her inhabitants, and in the lagoons 94,000 persons perished.

The Republic decided after the pestilence had done its work to erect a church to an influential plague-saint, as a votive offering dedicated by those who recovered or escaped from the disease, and in 1631 the church of Santa Maria della Salute was commenced, and completed in 1682.

There were many churches erected in commemoration of the various visitations of plagues, but Santa Maria is the youngest of the plague-churches. This habit of building churches in the middle ages was typical of the character of the people of those days. They looked upon the attack by some great pestilence as a Divine punishment, hence when the scourge passed by churches were built dedicated to some plague-saint, Our Lady of Health or of Deliverance (Madonna della Salute) or some other. The entire coast of the Adriatic, in consequence thereof, is copiously dotted with these commemoration churches. Perhaps greater attention to the drainage and sanitary conditions of their towns would have been much more effective in preventing recurrences of disease, although had these dwellers in the middle ages been so practical, many of their beautiful monuments would not have existed. It is, however, quite reasonable to assume that the artistic skill of the early architects would possibly have been equally as well devoted to other architectural monuments.

The interior of this church is octagonal in plan in the central portion, and is surrounded by an ambulatory and flanked by six side-chapels hexagonal in shape.

There are many excellent works of Titian within the church, of which may be specially mentioned "Venice preserved from the Plague of 1510," painted in 1512 or 1513 for the church of Santo Spirito and placed in Santa Maria in 1656, over the altar in the Sacristy, and three ceiling paintings, "Cain and Abel," "Abraham and Isaac," and "David and Goliath."

Besides other works there is a fine piece "Marriage at Cana," a large picture occupying the whole wall of the Sacristy by Tintoretto, a bright piece of work, but having no connection with the plague. On the high-altar there is a good marble group by Giusto le Court, depicting the "Virgin banishing the Demons of the Plague," and to the left a large candelabrum in bronze, an excellent piece of workmanship executed in 1570 by Andrea d'Alessandro Bresciano. The late Renaissance stalls in the choir are particularly rich, and many other items in this great church are well worth study.

Passing onwards in the journey up the Grand Canal we pass the Rio della Salute, the first narrow canal on this side, which connects the Giudecca Canal with the Grand Canal. Then rises the old Gothic church (now secularised) of San Gregorio, built in 1342, and having particularly pretty narrow Gothic windows and a delightful little cortile, with cloisters restored in 1911.

Silently passing the large Palazzo Genovese erected in 1898, in the Gothic style, and then the old palace of Semitecolo with its delightful early-Gothic windows, the Palazzo Volkoff is reached beyond the Rio della Fornace. Formerly the Palazzo Barbaro, this is a fourteenth-century structure, with its first-floor windows of an early-Gothic type.

The next, the Palazzo Dario in the early Renaissance style, is one of the most satisfactory, erected in the style of Lombardi about 1480, and then on the other side of the Rio delle Toreselle comes the Palazzo Venier, the ground floor of which was planned on a scale of special grandeur by Lorenzo Boschetti in 1749 and never completed.

Following on we reach the beautiful Palazzo Morosini-



THE PIAZZA DI SAN MARCO, SHOWING PORTION OF THE PROCURATIE VECCHIE.

Rombo (formerly Da Mula), erected in the fifteenth century, but in the fourteenth-century Gothic style, with a seventeenth-century balcony to the second floor. Proceeding past some not very interesting early Renaissance work, apparently used principally to advertise the mosaics of the Murano Glass Company, and by no means pretty, the Palazzo Loredan is reached, a seventeenth-century structure of little interest, surmounted by the fleur-de-lis, until his death in 1909 inhabited by Don Carlos, Duke of Madrid, the Spanish Pretender.

After the eighteenth-century Palazzo Balbi-Valier, of no special note, comes the Palazzo Contarini-Angaran (now the Palazzo Polignac), a fifteenth-century elaborate early Renaissance edifice, a fine specimen of this period, and then the Ponte di Ferro is reached, followed by the Accadémia di Belle Arti. This latter building contains the most important collection of Venetian pictures, and

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after the church of San Marco and the Ducal Palace is the most important place to visit. The greater part of the existing building was erected by Palladio in 1552, and the site was occupied originally by the Scuola di Santa Maria della Carità, the old hall of the Brotherhood of Charity, founded in 1260 or 1360. In 1807 Napoleon converted this building into an Academy of Art, after his conquest of Italy, and he brought from many churches and monasteries and other places pictures which he caused to be placed within this building. Thus was formed the nucleus of a wonderful collection of Venetian art, showing all its various stages of development. There are some 750 pictures in all, mostly by Venetian masters of the fourteenth to nineteenth centuries. Much time and many visits are required if a proper study is to be made of the works of art within this great building, and to describe



CHURCH OF SAN MOISE, CAMPO SAN MOISE, VENICE.

only the chief items would require much more space than is available at the moment.

The Sala dei Maestri Primitivi (Room I.), the Hall of Ancient Masters, has a fine gilded and carved wooden ceiling by Marco Cozzi (1461-84), and is further adorned by paintings by Bartolomeo Vivarini and another. On the walls are paintings by many famous ancient masters—Iacobello de Fiore, Lorenzo Veneziano, Michele Giambono, Michele Lambertini, and others.

The Sala dell' Assunta (Room II.), the Hall of the Assumption, contains what are perhaps the masterpieces of the entire collection, chief of which is Titian's "Assumption." This picture, which is the masterpiece of that great Venetian artist, is best seen from Room I., and was painted in 1516-18 as an altar-piece for the high-altar of the Franciscan church of the Frari. It is a wonderful conception, fascinating in the extreme.

Paolo Veronese has a fine "Madonna enthroned with Saints," and "Ceres offering her gifts to the enthroned Venice." Vittorio Carpaccio's "Presentation in the Temple," Giovanni Bellini's "Madonna enthroned with Saints," considered to be this great artist's masterpiece, painted for the plague-church of San Giobbe, as an altar-piece, about 1478; and Jacopo Tintoretto's work, "St. Mark rescuing a condemned slave," complete the list of the principal items in this famous room.

The Sala dei Maestri Italiani Diversi (Room III.) has few special works, but the Sala dei Disegni (Room IV.), the Hall of Drawings, contains a fine collection of sketches by Albert Dürer, and other masters of the Umbrian school, besides drawings by Michael Angelo, and specially interesting drawings by Leonardo da Vinci.

The Sala dei Belliniani (Room V.) contains works by pupils of Bellini and their contemporaries, and Room VI. (the Sala A. van Dyck) contains Flemish pictures of no special note, and a "Crucifixion" by A. van Dyck.

The next four rooms contain a great number of beautiful works by Romanino, Palma Vecchio, Paolo Veronese, Tintoretto, Bonifazio dei Pitati, and Titian. The last of the four rooms (Sala di Bonifazio), Room X., contains the masterpieces of the latest age of Venetian art, including Titian's last picture (1576) "Pietà," left unfinished by Titian, and completed by Palma Giovane; Paris Bordone's "The Doge and the Fisherman," the greatest work of this master, and very many others.

The remaining ten rooms contain too many great works for us to attempt to mention in detail, especially of Titian, Antonio Vivarini da Murano, Giovanni Alamanno, a number of great pictures by Giovanni Bellini, Tintoretto, Iacopo Bellini (father of Giovanni and Gentile), Cima da Congeliano, Boccaccio Boccaccino's masterpiece, "Madonna and Saints," Mantegna, and the masterpieces of Vittore Carpaccio (in the Hall of St. Ursula, Room XVI.), Gentile Bellini, Bonifazio, and many others.

Such is the amazing summary of great works of art contained within the walls of this great Academy of Art.

Time again demands a continuation of the hurried trip along the banks of the Grand Canal.

Close to the Academy is the Palazzo Contarini degli Scrigni, a Late Renaissance structure erected in 1609 by Scamozzi, and adjoining (part of the same block) a fine Gothic palace in the later fifteenth-century style.

Passing several not particularly interesting palazzi, the great Palazzo Rezzonico built by Baldassare Longhena in 1680, is reached. The great house was inhabited by Robert Browning, the poet, and he died here in 1889. This much-decorated pile was not a very successful production of the architect of the Salute. It is said that the top storey was added in 1745 by G. Massari.

The next block of palazzi worth noting is the Palazzo Fóscari and two contiguous palaces, a famous group much introduced by modern artists in their pictures. This block occupies a position of great prominence at the end of the first reach of the Grand Canal. The Palazzo Fóscari, commanding a fine view over the next reach of the canal as far as the Rialto, occupies the post of honour, and, looking backwards, on progressing further towards the Rialto, this group of stately palaces occupying such a conspicuous position form a magnificent terminal feature to this stretch of the busy waterway of Venice.

The first two palaces belonged to members of the Giustiniani family, and are in the Gothic style of the fifteenth century, after the style of the Ducal Palace. In the second of these Wagner composed the second act of "Tristan and Isolde."

The Palazzo Fóscari is the third palace of the group, and was at one time called the Palazzo Giustiniani before Doge Francesco Fóscari added the upper or top storey. It is said that in this palace in 1574 the Venetians entertained Henry III. of France. The two adjoining palaces, and possibly the Palazzo Fóscari,

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date from the very early part of the fifteenth century. All three are very similar in design, the windows in the stage close to the water being small and uninteresting. The stage above is more important, and has cusped ogee window-heads, similar to the Ducal Palace, and balconies. The third stage is the finest, all the windows having very deep traceried heads and large balconies, while the fourth stage is very similar to the first, excepting that between the shafts of the windows there



LOOKING ACROSS THE PONTE DI RIALTO FROM THE RIGHT BANK OF THE GRAND CANAL.

is very beautiful and delicate balustrading particularly characteristic of this period of Venetian work and charming in effect.

Slowly wending one's way further up this left bank many palaces are yet passed, some good in design and others not. The Palazzo Dona, a particularly beautiful specimen of the twelfth-century Byzantine-Romanesque style, is situated close to the Palazzo Papadópoli, a late Renaissance edifice of the sixteenth century rebuilt in 1874, and gorgeously fitted throughout in the sixteenth- and eighteenth-century styles.

The interior is well worth inspecting, and contains genre pictures by G. B. Tiepolo.

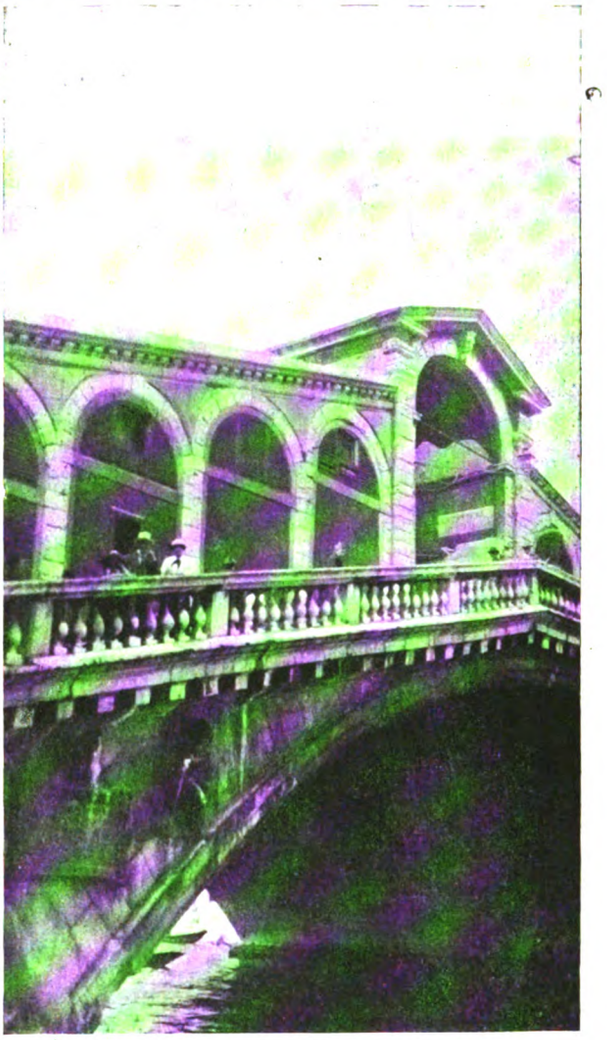
It is quite easy to obtain admission, and visitors are very courteously shown through the various parts of this fine mansion. This place was formerly known as the Palazzo Tiepolo, and was designed by Sansovino. The Palazzo Businello, a Byzantine-Romanesque edifice of the twelfth century, is badly injured by modern additions and restorations.

Passing onwards the Ponte di Rialto is now reached, lying due north from the starting-point (the Dogana di Mare) at a distance of about half a mile as the crow flies, and practically half-way, or about a mile, from the commencement of the canal, by gondola; completing, as it were, the lower half of the inverted letter S formed by the Grand Canal.

The Ponte di Rialto—i.e. "di rivo alto"—is a famous old structure erected in 1588-92 by Antonio da Ponte, on the site formerly occupied by an early wooden bridge. It is a particularly picturesque structure, largely, as with so many other Venetian structures, by virtue of its situation. This bridge consists of a marble arch of a single high span of 90 feet, being 25 feet in height. The entire bridge is 157 feet long and 72 feet wide, and is strikingly effective with its balustraded parapet and the arcaded double row of shops occupying its central portion. The Ponte di Rialto was the only permanent connecting-link between the eastern and western quarters of the city down to as late as 1854. Shakespeare did much to make the name famous, for in "The Merchant of Venice" Shylock speaks of the "Rialto"; but it is the district Rialto (the real centre of the original city) of which Shylock speaks, not the bridge.

The views accompanying these notes give an excellent impression of perhaps one of the quaintest shopping centres in the world. Always presenting an animated scene, the great variety of sun-blinds adds to the crowded appearance of the stepped-roadway of this famous bridge.

The outer faces or frontages of the arcades adjoining the outer pathways are closed in, the shops being open only to the central roadway.



A PORTION OF THE PONTE DI RIALTO ACROSS THE GRAND CANAL

Confining one's attention to the left-hand canal bank, and passing under the bridge, the Palazzo dei Camerlenghi comes into sight, an early Renaissance work of much beauty, erected in 1525 by Guglielmo Bergamasco, at one time the residence of the tax-collectors of the Venetian Republic. The Fábbriche Vecchie di Rialto (the old buildings of the Rialto) comes next, slightly recessed, a building erected in 1514-22 by Scarpagnino;

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and in front is the Erberia (Herb Market), a very busy little market-place, where the vegetables and fruit brought by boat from Malamocco, Pellestrina, and elsewhere, are sold.

Projecting somewhat beyond the old buildings rises the new buildings (Fábbriche Nuove di Rialto), erected in 1555 by Sansovino, but restored in 1860 to such an extent that the original building has almost disappeared. This building now accommodates the Reale Corte d'Assise.

Whereas the direction one takes just before reaching the Ponte di Rialto is about north-east, now arriving at the Pescheria or Mercato del Pesce, the direction is south-west, the Grand Canal taking a sharp bend just to the north of the Ponte di Rialto. The Pescheria is a particularly picturesque and lively fish-market, with its modern Gothic market-hall erected in 1907. Silently drifting past the Rio della Pescaria and the Rio di San Cassiano, two of the narrow side waterways, on the way passing the Palazzo Brandolin (formerly the Palazzo Morosini), a beautiful fourteenth century Gothic structure in the style of the Ducal Palace, the Palazzo Cornaro della Regina is reached, erected in 1724 by Dom Rossi, on the site occupied previously by the palace in which Catharine Cornaro (Queen of Cyprus) was born. This building is now the Monte di Pietà, or pawn-office.

Fronting the Grand Canal, and with a narrow waterway on either side, stands the gorgeous Palazzo Pésaro, a huge building, perhaps the finest late Renaissance palace in Venice, erected in 1679 by the architect of Santa Maria della Salute, but, it is said, not completed until 1710. This great building, which since 1899 has been the property of the city, and is now the Galleria d'Arte Moderna, is one of Longhena's greatest works, and is an imposing and stately edifice.

There is not much of very great interest until the early Byzantine-Romanesque palace of Fóndaco dei Turchi is reached on the western side of the Rio dei Megio. Erected in the twelfth century, this is a fine example of the Byzantine period contemporary with the church of St. Mark's. It was presented to the Marquises of Ferrara by the Republic in 1381, and in 1861-69 was restored and, unfortunately, largely modernised, so that much of its early historical style has been lost.

The left bank of the Grand Canal, so far as items of architectural interest are concerned, ends at the Ponte alla Stazione close by the Stazione Ferroviaria, by which it will be remembered entrance is made, across the Ponte sulla Laguna, into this great city of water highways and architectural masterpieces.

(To be continued.)

ARCHITECTURE AT THE ROYAL SCOTTISH ACADEMY.

The Royal Scottish Academy has now entered on its ninetieth annual exhibition of painting, sculpture, and architecture. The galleries in Princes Street, Edinburgh, were opened to the public on Saturday, May 6, and will remain open for the next few months.

The same room as in former years has been allotted to architecture—an ideal room in many ways, but rendered still more so by the reduced number of works shown on the walls, thus avoiding the ever-objectionable impression of overcrowding.

One can see that the war has had its effect, and this year may perhaps be one of the transitional years prior to the dawn of a new epoch of architecture, which may be expected to arise after the war.

The majority of the frames contain photographs, some being taken from drawings. There is a scarcity of "show" drawings, however, although there are a few excellent examples of draughtsmanship which relieve the general austerity of the room.

The foreign element, which usually has a fair representation, is practically omitted, only one Belgian architect being represented by a few works.

As a piece of good architecture the most interesting work perhaps is Sir John Burnet's design for the Second Church of Christ Scientist in Palace Gardens Terrace, London, W., which has previously appeared in London on the walls of the Royal Academy. The building is illustrated by one of Walcot's perspectives in colour, which always have a charming and delightful atmosphere. Underneath the perspective are small scale plan and sectional elevations which fully illustrate it. The church is most interesting and unique both in plan and elevation. Along the street front runs an open arcaded cloister of five or six bays, which connects up to the church proper. Through this cloister may be seen the garden or court, beyond which again is seen the wing of the building forming the hall, with class-room accommodation. The plan seems to bear the influence of the Early Christian basilica. The church proper is square in plan and covered with a low flat dome which does not show from the outside. A high campanile with conical finish and very Italian in character rises from the north-east corner. The church appears to be built with a bluish red brick with white stone base, string courses and cornice. On three sides are great three-light classic windows with bold projecting pediment over each, being quite characteristic of Sir John's work. The massing is square in effect, with stone band courses relieving the monotony of the brickwork.

Another work exhibited by Sir John Burnet is his Institute of Chemistry, London. This exhibit, however, was seen here last year, only he has added two additional photographs, one of the Keppel Street front and main entrance, the other a view at the top of the staircase. The main entrance (which was illustrated in "The Architect," April 28, 1916) is a very interesting piece of design, with its broad architrave and broken pediment, above which is a niche in which is set Gilbert Bayes' statue of Joseph Priestley, the chemist, perched up on a block of masonry. The other photograph shows a handsome iron or bronze railing with a doorway on the landing, which has a broad marble architrave and is otherwise typical of his work. The excellent black-and-white perspective and half-inch scale detail have, as already said, been hung before.

Above the aforementioned church design, and occupying a very prominent position, is a large upright strainer by Mr. A. N. Paterson. This is a half-inch detail drawing of the tower and council chamber gable of Gourock Municipal Buildings. The drawing is a well-finished one, with all the shadows carefully shown on. The design is classic in character, but rather hard and formal in expression, and lacks the touch of refinement that one expects to find in Mr. Paterson's work. The tower is a high clock tower finishing with a steep tapering roof, crowned by a flêche at the top. A small plan and two elevations illustrate the complete scheme, only a part of which is evidently to be built at present.

Mr. Paterson also has two frames of photos of a house at Milngavie in Classic style, all of which are very good.

Mr. E. L. Lutyens, A.R.A., this year again sends some new views of the work at the Imperial Delhi. All four photographs are from Walcot perspectives. It is regrettable that the coloured originals have not been shown in their stead. Some impression of the full Indian colouring could then have been got, especially with regard to the interiors, which are richly and elaborately decorated in an original manner, but retaining the fine Indian feeling throughout. The one frame has a view of the Commemoration Column with an interior view of the Durbar Hall. The column is simple and beautifully proportioned, and supports a great vase graceful in outline and Indian in design. From the vase a growth appears out of which a central stem rises and supports a large star which forms the terminal. The Durbar Hall is

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a great domed hall lavishly decorated but architectural in every way. The other frame shows the Ball Room and the Entrance to Council Chambers. The Ball Room is a high flat-ceilinged chamber, with painted decorations and highly Pompeian in appearance. The entrance to the Council Chambers is approached by a series of flights of steps, and is a huge arched opening in a surrounding mass of plain masonry. The deep ingoes of the entrance and the big projection of the main cornice above give a telling shadow effect. Mr. Lutyens has also other two exhibits, being photographs of Heathcote, Ilkley. This house is now well known to almost every architect, but new views of it are always looked at and studied with pleasure. Certainly those shown of the south-east pool and that of the staircase hall could not be more charming.

Mr. Ernest Newton, A.R.A., has two exhibits of mansion houses. One is a house in the Grand Duchy of Luxemburg in an English style with gable treatment. The other, a house at Kingswood, Surrey, is an excellent example of a large house in the Georgian style. These drawings, certainly the most attractive ones in the room from the point of view of draughtsmanship, are by Lieutenant Cyril A. Farey. They are beautifully rendered in colour, with great neatness and character.

Besides these two exhibits Mr. Newton sends a number of photographs of other houses which are all excellent indeed. Upton Gray Manor, Hants, has quite a fine old English effect about it, and is illustrated by four exterior views. Two photos of Luckley, Wokingham, are shown which is another good Georgian house. Mr. Newton also has a wonderful stretcher with three photos mounted in the centre and a drawing at each side all illustrating a fine Georgian staircase at Ardenrun Place, Godstone, Surrey. This stretcher seems to have been hurriedly got together, as the drawing on the right is uncoloured and has an unfinished appearance. The one on the left side is beautifully coloured and is a nice bit of detail. Both drawings have a sketchy look about them, but have nevertheless quite a strong character in the draughtsmanship.

Occupying a considerable amount of wall space is a frame of Khartoum Cathedral by Mr. Robert S. Weir (better known as Mr. R. Weir Schultz). The drawing is to a large scale and includes plans, elevations, and sections nicely rendered in colour with shadows shown. The church is a simple cross in plan, with an isolated tower at the south-west corner linked to the church by a low covered way. It has nave and chancel, with processional aisles and small transepts. The roof is covered with red pantiles, is of a comparatively flat pitch, and has no feature at the crossing. The building has an original Romanesque feeling done in a simple manner with plenty of plain walling, no doubt to make it as easy as possible for the native workmen. Another frame shows six photographs of the cathedral which are very interesting. Quite a nice effect internally is got by making the voussoirs of the arches of dark and light stone alternately.

Mr. Weir also exhibits two nicely coloured decorative details of St. Andrew's Chapel, Westminster Cathedral.

Professor C. H. Reilly shows a fine large perspective in soft tones of colour of his new building for the School of Architecture, Liverpool. The building is quite Italian-looking. The lower storey is a long stretch of brickwork with practically no window openings, the only interruption being the large, square door opening in the centre. The first floor has a regular treatment of half columns right along the whole length of the façade. The top storey is treated as a frieze, with the brickwork done off in panels between the windows. The cornice, which is the main feature perhaps, is quite a heavy affair, having a big projection and practically every member enriched in some way. The roof is covered in red pantiles, and is one long unbroken stretch.

Professor Reilly has also a large, beautifully coloured, half-inch scale drawing with shadows in blue. This drawing is one of the best detail drawings exhibited. The detail is a portion of the front of the Students' Club, Liverpool University, and shows the entrance and bay-windows. The design is Georgian in character, with a brick and stone treatment. Professor Reilly's favourite order, the fluted Doric, is used both at the entrance and round the bay window. He has another work—namely, a small photograph of the Gilmour Debating Hall, Liverpool— which is interesting and characteristic of his work.

A very interesting new building in Glasgow, which is being erected for Messrs. Cranstons' Tea Rooms, Limited, is shown by Mr. James Miller. The block is a seven-storey one with a comparatively short frontage to Renfield Street, with a narrow lane at each side, thus isolating it and giving the architect every freedom in designing the structure. The building comprises picture-house and tea-rooms, also having lettable space on the upper floors. It is faced with white Carrara ware—a favourite material with Mr. Miller. Two narrow projecting features at each end run up the full height of the building and are architecturally massed up to form a finish at the top. Centrally on the ground-floor is a fine entrance to the picture house, which runs through two storeys, flanked on each side by two huge, dark, rich, green marble columns. A semi-circular window above again marks the importance of the entrance, and gives it the picture-house character. Rising above these two features and centrally placed is a huge domed cupola, which forms a suitable termination. Iron balconies are introduced, giving an interest to the frontage. The building is quite academic in style and pleasing in effect. The perspective which illustrates the work is rendered in colour, the artist being Mr. C. Terry Pledge. The sketch is bluish in general effect, and is quite a good perspective, although the artist shows a slight weakness in the drawing of the semi-circular window over the main entrance.

Sir Robert Lorimer has only one frame hung this year—namely, six photographs of Kinellan, Murrayfield. The house is a simple Classic mansion. A view of the doorway is given, which is very simple, with a slight French feeling about it. The dining-room and hall are very fine interiors. Two interesting fireplaces are also represented.

Sir Robert Rowand Anderson has five exhibits hung, all photographs. The Memorial Cross to the late Dean Ramsay in St. John's Churchyard, Edinburgh, is in the form of a Celtic cross. The interior view of museum, Society of Antiquaries, Edinburgh, shows the compound steel beams on the ceiling exposed to view. The remodelled interior of the Senatus Room at St. Andrew University is in good Classic. The view of the dome over entrance to quadrangle of the old building, Edinburgh University, is very good. The last view is of Mount Stuart House, Bute, being an interior of the chapel, which is a rather poor piece of Gothic work.

Two sets of good photographs are displayed by Mr. Gilbert Scott. The first six are of St. Paul's Church, Derby Lane, Liverpool. This church is quite a large one, and is strongly treated in an original manner. A large tower rises from the crossing. The interiors are specially fine. The main aisle is groin-vaulted. The walls are plastered, but the arches are built with facing brick. A nice effect is got by all the corners being done without and in bands of brick, which show up very well with the plaster work. The second set of views is five photographs of the Church of Our Lady, Northfleet. This church, though smaller than the other, is very much superior architecturally. It is, in fact, a masterpiece of design. The upstanding western tower, entirely built of brickwork, is a splendid piece of architectural massing of great dignity and originality. The interior is also very fine, being finished similarly to the other church.

Mr. Walter Cave exhibits a half-inch drawing and one or two photographs of "Ewelme Down," a large mansion which is a very satisfactory Tudor design.

Mr. James A. Morris usually has some striking water-colour drawings, but this year he has confined his

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exhibit to a few photographs which are all excellent pieces of architecture. One frame shows the wrought-iron gates of Girvan Churchyard, another contains three views of St. Ninian's, Troon—the font, nave with temporary chancel, and porch. The third frame contains views of Hinton House, Northamptonshire.

An excellent house is exhibited by Messrs. Leadbetter, Fairley & Reid. The house is in their usual Scotch style L-shaped in plan, finished in roughcast with stone dressings. The perspective is an excellent piece of pen-and-ink work. The photographs of the interiors are also highly commendable. An Aberdeenshire Castle, by Mr. William Kelly, is a notable study of measured work. The drawings are exceedingly well finished, being very neatly rendered in sepia wash. This study is one of the finest in the room.

Monsieur Jean Joseph Caluwaers has quite a display of Belgian work, the most interesting of which is his Colonial Palace at Gand. It is a very pleasing exhibition building. The main entrance to the great domed hall is flanked by two tall towers, the great dome between is comparatively flat, having a fine outline with strong bands running round it. Four photographs are shown of this palace with a small photograph of the plan in the centre giving the lay off of the building. The plan is the regular Beaux-Arts type. His other works are all pen-and-ink detail drawings of various parts of Brussels Cathedral. The drawings are shaded with ink lines and appear old-fashioned in rendering, and certainly this Gothic work has not the same interest which his exhibition work at Gand possesses.

Two interior photographs of Dalziel U. F. Church, Motherwell, are shown by Mr. Henry F. Kerr. The church is Byzantine in style. Three large detail photographs of different types of caps are given which are very richly and originally carved.

Messrs. Stewart & Paterson have some photographs of additions to house at Auchterarder which is a very good example of Classic work. They also contribute photographs of a club and schools in the Glasgow district, which are not specially worthy of comment.

Mr. Wm. Hunter McNab's photographs of the library, Carrickarden, Bearsden, and of the dining-room, Redlands, Bearsden, are very good.

Other architects represented are Mr. John Keppie, Messrs. Mills & Shepherd, Mr. Temple Moore, Mr. David McArthy, Mr. Harold Ogle Tarbolton, Mr. W. J. Devlin, Mr. Matthew Ochterlony, and Mr. Stewart Carmichael.

SHAKESPEARE'S LONDON.

AT the third ordinary meeting of the London Society held on May 11 in the Hall of the Royal Society of Arts, a lantern lecture was given on "Shakespeare's London" by Mr. T. Fairman Ordish, F.S.A.

The main outline of his subject, he said, appeared in three Thames-side views (of which facsimile reproductions, published by the London Topographical Society, were shown on the walls). The first was the drawing by Antony Van der Wyngaerde in the Sutherland collection in the Bodleian Library; it represents Tudor London, and shows some of the change which ensued upon the Reformation. The second was the view of Visscher, of which a unique example is in the King's Library; this is dated 1616, and is a picture of Jacobean London. The intervening London—Elizabethan London, the London which was the sphere of Shakespeare's life-work—was shown by Mr. Ordish through the medium of lantern slides. The third view was that of Hollar, dated 1647, and shows London when Elizabethan tradition and the theatre were on the point of being effaced, and which disappeared in the Great Fire.

Shakespeare in his boyhood had been within the radius of the stir and emotion of the Kenilworth Revels held in honour of Queen Elizabeth. And when using the road marked in Ralph Agas' map as "the way to Uxbridge," he arrived in London in the early summer of 1586—very shortly before the discovery of the Babington conspiracy, which had for its object the murder of Elizabeth and the release of Mary Queen of Scots—he found the strongly Protestant populace deeply moved with concern and solicitude for the safety of their beloved sovereign. These feelings were immensely heightened by the event of the Great Armada two years later.

Those who then walked the London streets saw on every hand the ruins of the ancient order as the background of new conditions. There were palaces where formerly stood domestic monastic buildings. London was losing its character of a garden city. The open spaces and gardens of the dissolved religious establishments were being rapidly filled up with building.

As Shakespeare first came along Holborn he passed the residence of Lord Southampton, the patron to whom he dedicated the "first heir of his invention" a few years later; the houses of the Staple Inn frontage still exist much as Shakespeare saw them. The road descended to the bridge over the Fleet. As the poet passed Ely Place—where he afterwards laid the scene of the death of John of Gaunt in his play of Richard II.—he may have noticed the extensive gardens of Sir Christopher Hatton, who then possessed the property.

If Shakespeare rode up to London he may have turned into Smithfield and disposed of his horse in the market there, to avoid the expense of the animal's keep. But if he came on foot, as Sir Sidney Lee thinks was most likely the case, he entered the city by Newgate. This gateway, rebuilt in 1586, was "the fairest of all the gates of London, and called Newgate from the newness thereof." A new gate set in the ancient wall was a sign and a symbol of the new conditions in London, of which Shakespeare himself was destined to become the chief result.

Within the precinct of the dissolved Priory of Holywell at Shoreditch the first playhouse had been built by James Burbage in 1576. The site was recently ascertained with precision by Mr. Braines, one of the officers of the London County Council. Within the Bishop's Gate was the precinct of the dissolved priory of the Nuns of St. Helens. Here, according to the evidence of documents in the Record Office, Shakespeare was living in 1596. On his way to the Shoreditch Theatre he must have passed frequently the Bethlehem Hospital or lunatic asylum, and he may thus have observed the manifestations of madness which are so touchingly portrayed in the character of Ophelia.

Westminster Hall, we may be sure, Shakespeare knew, and it happily exists to-day. Here he laid the scene of the deposition of Richard II. The splendid jousts held in the adjoining tiltyard in the time of Henry VIII. were still a memory in London when the play of Richard II. was produced. And there had also been occasional grand entertainments there in the reign of Elizabeth. So the players, as well as many of the audience, would know the correct ceremonial for staging the scene of the lists at Coventry.

At Whitehall, said Mr. Ordish, we seem to come into touch with the romance of Elizabeth's reign. The Thames was the chief highway of London. The royal barge, in its progress along the banks, must have made a moving picture of costly colouring and beauty. The description of the Egyptian queen's progress on the river in "Antony and Cleopatra" applied the heightened terms of poetry and rhetoric to something that was familiar to the Elizabethan Londoner:—

> The barge she sat in, like a burnished throne,
> Burn'd on the water; the poop was beaten gold;
> Purple the sails, and so perfumed that
> The winds were lovesick with them; the oars were silver,
> Which to the tune of flutes kept stroke and made
> The water which they beat to follow faster,
> As amorous of their strokes . . . . . .
> . . . . . From the barge
> A strange invisible perfume hits the sense
> Of the adjacent wharfs.

Elizabethan London was more cosmopolitan than many European capitals. In Lombard Street the merchants of Germany, France, and Italy were con-

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spicuously differentiated by varieties of costume. On the site of the present Royal Exchange, Sir Thomas Gresham laid the first stone of the great Bourse in 1566—the Rialto of Shakespeare's London. The design was in imitation of the Bourse at Antwerp; the materials of its construction were imported from Flanders; the architect and builder was a Fleming named Henryke. The opening of this building by Queen Elizabeth in state when Her Majesty commanded it to be proclaimed that Gresham's Bourse should be styled thenceforth the Royal Exchange is one of the most significant events in the history of London. The trumpet of that herald on January 23, 1571, announced a new epoch.

Hollar's map, dated 1647, gives some good representations of the many great houses which were built on the north bank of the river after the Reformation, chiefly on the sites of the "inns" or London houses of the bishops under the old regime. Durham House, for instance, was originally the London house of the see of Durham. It was bestowed by Edward VI. upon his sister the Princess Elizabeth, and after her accession she allowed it for the residence of Sir Henry Sidney, the father of Sir Philip Sidney, Edmund Spenser's friend and patron. In 1583 the Queen granted a part of the house to the brilliant and unhappy Sir Walter Raleigh, and here he lived till the end of her reign. At a later date Aubrey recorded his recollections of Durham House thus: "Durham House was a noble place. After he (Sir Walter Raleigh) came to his greatness he lived there. I well remember his study, which was on a little turret that looked into and over the Thames, and had a prospect which is as pleasant perhaps as any in the world." Raleigh belonged to the romance of the Elizabethan age, and his fortunes must have interested Shakespeare as well as Spenser.

After showing two views of Arundel House and its courtyard, which occupied the site of the old palace or "inn" of the Bishops of Bath, Mr. Ordish pointed out that it was a house of this type that was the residence of the Earl of Southampton, between Chancery Lane and Staple Inn in Holborn. It had been erected on the site of the inn of the bishops of Lincoln in the time of Edward VI. Much of the old buildings remained. No doubt Shakespeare was a visitor, and quite possibly stayed there. But when he sought that nobleman's patronage he had already found his means of livelihood; he need not be a suppliant, he might be a friend. The true patron of Shakespeare, added Mr. Ordish, was the Elizabethan playgoer.

The excellent map of Elizabethan London, which was published in the "Speculum Britanniæ" of John Norden in 1593, contains the earliest known representation of a playhouse—the Rose, where some of Shakespeare's first dramatic work was produced. There were two other public theatres in London at this time—viz., the Theatre and the Curtain at Shoreditch.

In the winter of 1598-9 the Burbages moved their theatre from Shoreditch, set it up on Bankside, and named it the Globe. Between 1599 and 1613 (when it was burned down) the most vital of Shakespeare's plays were produced in that building. It was replaced by a hexagonal theatre which existed in the last two years of the poet's life, and where no doubt his latest plays were staged.

The lecturer then drew a picture of the Queen coming from Whitehall to Blackfriars, and also of players going from Blackfriars to Whitehall to present a play at the command of her Majesty in the great hall of the palace. In such circumstances plays were produced under conditions much more nearly approximating to those of our present-day theatre.

With a picture of Wren's church of St. Mary the Virgin, Aldermanbury, on the screen, Mr. Ordish summarised the points of his lecture, from which he drew the moral of "continuity." The Gothic church had been destroyed by the Fire. The theatres had all disappeared. But here in this churchyard was a memorial to two men, Heminge and Condell, the "fellowes" of Shakespeare, mentioned in his will, who performed the inestimable service to all succeeding generations of collecting the manuscripts of the immortal plays and printing them in the Great Folio of 1623. To them and to the art of printing we owe that this most famous book in the world was preserved.

Finally, Mr. Ordish drew a contrast between Bankside as it was in Shakespeare's time and as it is now, and referred to the possibility of the proposed St. Paul's Bridge and southern embankment redeeming this squalid neighbourhood, so rich in associations, and by the aid of the modern architect, sculptor, and engineer, making it a memorial of Shakespeare and his London.

GIFT OF ENGLISH FURNITURE TO THE VICTORIA AND ALBERT MUSEUM.

MR. FRANK GREEN, of Treasurer's House, York, has recently presented to the Victoria and Albert Museum a number of important pieces of English furniture, together with several other objects of considerable artistic interest. The furniture belongs for the most part to the period of the later Stuarts and William and Mary, and includes several types hitherto unrepresented in the Museum collections. Among them may be specially noted a pair of walnut chairs of about 1700, covered with embroidery in silk and wool, representing vases of tulips, carnations, and other flowers, and two stools similarly covered; also a single chair covered in finer embroidery with floral designs. Another chair, with a tall back carved in open-work and a seat covered with embroidery, belonging to the period of William and Mary, is illustrated in Macquoid's "History of English Furniture." Several interesting tables are included in the gift. Of these the earliest may be attributed to the later years of the seventeenth century. It has legs carved in open spirals, and a top decorated in marquetry and fitted with a panel enclosing a backgammon board. This table also is illustrated in Macquoid's History. Another table of about the same period as the above is of gilt wood with gilt *gesso* top, finely ornamented in French style, such as characterises the period of Louis XIV. A third specimen, a side-table, of gilt wood, in the style of William Kent, is a typical example of the massive furniture which adorned the great houses of England during the reign of George II. These pieces are exhibited in Rooms 55 and 56 of the Woodwork Galleries.

It is well known that the Victoria and Albert Museum urgently needs good specimens of English furniture, and Mr. Frank Green's generous gift is the more welcome at this moment, when public funds are not available for making purchases. Moreover, pieces like these, which belong to the best period of English craftsmanship, are year by year becoming rarer and more difficult to obtain.

Of the other objects included in the gift, the most important are a large cushion, covered with crimson velvet brocade in a bold design of floral devices within compartments, Italian weaving of the first half of the sixteenth century; a smaller cushion worked with a graceful pattern of flowering stems, a good example of Elizabethan embroidery, dating from about 1600; two chair-seats decorated with effective floral designs, English "petit point" work of about 1700; an interesting sampler panel of the same period, embroidered with a figure of Queen Anne; a punch bowl of Chinese "famille verte" porcelain, K'ang Hsi period; and two Chinese ridge tiles with green and yellow glazes, surmounted by equestrian figures, dating from the Ming dynasty.

Mr. Frank Green has also lent to the Museum a set of four valuable chairs of the time of Queen Anne, covered with Mortlake tapestry woven in wool and silk, with designs of flowers.

THE Royal Amateur Art Society will open their exhibition at 25 Park Lane, W., on Monday, May 22. A short address will be given on that date by Sir T. G. Jackson, Bart., R.A., and on May 23 by Sir Ernest George, R.A.

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BUILDING UNITS.

A paper was read by Mr. Bligh Bond, F.R.I.B.A., before the Royal Archæological Institute, at Burlington House, on May 3, under the title of "Evidences for a Theory of a Variable Standard of Measure, relative to Fixed Standards, as applied to Ancient Buildings by Conventional Systems of Geometry."

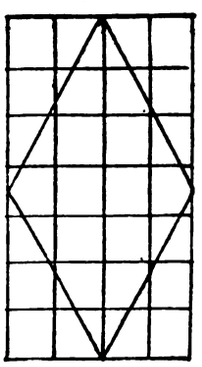
Mr. Bond, in his introduction, recalled the circumstances of a previous lecture at which he announced the discovery of a curious number-unit present in the general setting-out of the plan of Glastonbury Abbey, and detected in the plans of other large churches. (See "The Architect," July 11, 1913.)

A subsequent study of these units showed them not so much as independent units, but as proportionals.

Architectural proportion may be classed as of two kinds: (1) the purely arithmetical; (2) that in which the measures denote a geometric principle.

But there has been some unwillingness on the part of architectural students to recognise the presence of geometrical principles in the general proportion of mediæval buildings, especially with regard to the proportions of ground-plans, to which this paper principally refers. This unwillingness seems to have arisen not only from the fact that these geometric principles are merely latent and not obvious, but because, when the test is applied, the actual proportions of a plan are often found to conform only approximately, or even quite loosely, to the precise dimensions required for the perfect illustration of the principle.

To take a typical example. The triangular proportion, so well attested by documents in the case of Milan Cathedral, has been detected in numerous other instances of mediæval work, including our own larger churches; but these have been shown in some instances to deviate in a material degree from the strict geometric ratio ($\sqrt{3}$: 1) of length and breadth, and, in the case of those works which were erected under the auspices of William of Wykeham, the ratio of 7 : 4 in length to breadth has been found. This is a very old and rather roughly approximate expression for the proportionals of the double equilateral triangle.



These proportionals were known and used for triangular settings amongst the Greeks and Romans, just as the use of the proportionals 17 : 12 for the diagonal and the side of a square were employed by the Roman builders.

But in the case of our own mediæval work a finer adjustment of proportionals is to be found, on a purely arithmetical basis. The little Lady chapel at Glastonbury has now been carefully measured, and is found to be planned most accurately on the lines of the symbolic "Vesica Piscis" or double equilateral triangle.

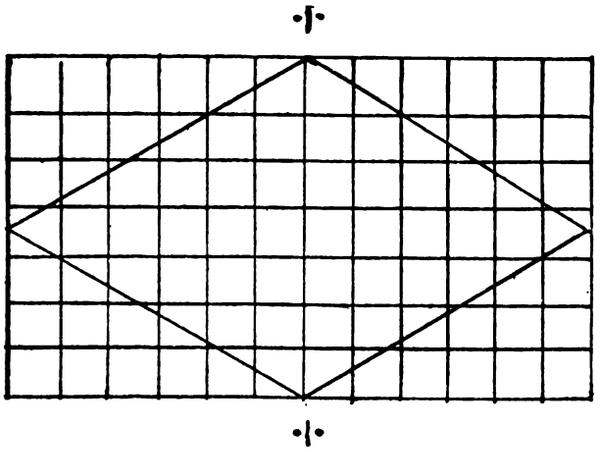
The leading dimensions in this case are 37 feet by 64 feet, representing the exterior length and width of the building, the latter including the projection of the pilaster buttresses on N. and S. walls, which are found to be reduced in projection beyond the rest of the series, in order, apparently, to introduce greater correctness in the proportion.

But the simpler ratio 7 : 4 seems to have been very generally accepted for this purpose, and it allows of the union of the two leading principles on which, as we gather from Cesariano, mediæval buildings were planned, viz., the rule "a pariquadrato" (by a system of commensurate squares), and the rule "a trigono" in which the proportions of the triangle are incorporated in the plan or elevation (see diagram).

Seven, as a proportional, would be a favourite one for another reason. The builder would frequently have occasion to employ the ratio of the diagonal of a square to its side, and this can be rendered by the proportionals 5 : 7 or 7 : 10. Be it remembered also that as a ratio of circular measure, 7 was the accepted value of the diameter, as compared with 11, the length of the semicircular arc, or 22, that of the whole circle.

Moreover, there was yet another geometrical figure which we find to have been employed in mediæval proportion. This was the so-called Egyptian triangle of 3, 4 and 5 (described in the Milanese Cathedral protocols as the "figura triangularis"), and used there for the formation of the upper stages of the building. These records constitute the best evidence we have at present of the perpetuation and use of an Egyptian tradition in the work of the Christian ecclesiastical builders, and they cannot be ignored in the research for a canon of proportion and of measures.

The occurrence of the number seven is typical in the division of ancient measures. The Egyptian cubit of 20".6 (+ or −) was normally divided into 7 palms, and we find different cubits in arithmetical relation thereto. The Jewish cubits were of 5, 6, or 7 palms. The Louvre cubit has a special mark over the sixth to seventh digits, from which the use of a triangular proportional may be inferred, as this is the counterpart of the 7 : 8 relation already noted as that of the vertical of a triangle to its length of base, and is nearly as accurate as the other. (See diagram "a pariquadrato," 12 × 7.)



The Aim of Geometric Proportions in Building.

Seven, and analogous numbers, thus appear as Mean Proportionals—that is to say, as convenient arithmetical expressions for the purpose of denoting these. The object to be gained by the introduction of these ratios is therefore that which underlies the use of such quantities in geometry—i.e. *the generation of equivalent areas, with diverse proportionals.*

For a right conception of the purpose of the builders who used them we must look at the true geometric use of the Mean Proportional, and here we come in sight of a principle correlating Measure and Proportion.

A study of the measures of antiquity leads to the conclusion that the scales employed by the older builders were not so much absolute as relative.

A second element deduced from the measures of ancient monuments, and one on which Professor Petrie lays stress, is this—that there is manifest an endeavour to create equalities of area with different dimensions, or to record in design the relation of squares of linear quantities with one another. ("Pyramids and Temples of Gizeh," p. 181.) This throws us back at once on the principle of the "Egyptian triangle" as the basis of mensuration.

The formation of rectangles equal in area to squares,

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and the squaring of triangular or circular areas, are problems akin to this. The practice of obtaining equalities of area with diverse proportionals is a most ancient one.

The exact equation of areas—as of solidities—involves the knowledge and use of the roots of whole numbers as linear proportionals, and to carry this principle into practice the builder would have to choose one or other of two alternatives—viz. either he must find an arithmetical expression in whole numbers for the harmonising of all dimensions, or he must have more than one scale of measurement.

The former device would appear to have ruled the construction of large monuments, with some fractional correction for adjustment; but the latter also was evidently known and practised in Egypt, where two or three different orders of digits were employed (see the Standard Cubits preserved), and the cubit itself is remarkable for nothing so much as its variability. The same may be said of the Hebrew measures.

The question now arises: How far do the ancient standards of measure, as we know them from monuments, conform to a system of geometrical proportionals?

The answer may best be made, perhaps, by taking as a datum the best known and most permanent historical standard of measure—namely, that which is represented in the ancient as well as the mediæval systems—the metric yard of 39.6 (+.06) of our inches, used in Britain until 1439, and identified with the later Egyptian rod of about the same length.

This measure, tallying as it does with the meridian measures of the earth (though whether by accident or by design is not a part of this enquiry), is affiliated in our own system to the yard of 36 in., the two measures being established in the ratio of 11 : 10. Our yard does not clearly appear in the monuments of Egypt, though its presence has been inferred, and there are casual instances of its occurrence in the Great Pyramid.

A third standard, the royal cubit of 7 palms or 28 digits, measuring about 20.6 of our inches (20.59 on the Louvre cubit, and 20.63 in the King's Chamber), ceases to appear as an acknowledged scale of measurement in the mediæval systems.

Hence we have two well-recognised standards of measure in the mediæval systems—the yard and old metre, and two in the ancient system—the metre and the cubit, and the metric measure is common to both.

Let us now see if any quite simple geometric relation can be established between these on the basis of the Egyptian triangle as a canon of proportion. Lay down this triangle with the squares of 3, 4, and 5 developed on its three sides, and complete the rectangle in which the figure lies. This rectangle has sides as 11 : 10.

Take next a base line CD of 8/11ths with an elevation of 7, and join AC, AD. This gives the setting for the equilateral triangle. If the length of the whole rectangle be one metric yard of 39.6 in., the breadth is a statute yard of 36 in.

If the height of the quasi-equilateral triangle ACD (7 units in diagram) be an English cubit of 18 in., the base of this triangle is 8 units, or 20″.57—tallying with known examples of the Egyptian royal cubit; and this base-line CD is 8/11ths of the whole length of the rectangle, a fraction marked also in the first of the twin diagrams as the point at which the Euclidian square of 5 impinges on the boundary of the figure. This gives the precise relation between the most authentic Egyptian digit (0″.727) and the British inch, since $\frac{8}{11} \times 1'' = 0.''727$.

The argument of a human source of measures does not exclude an antecedent origin from geometry, since it can be shown that the human measures employed are capable of the closest adjustment to a true arithmetical series, and it is easy to argue that they are secondary in their nature.

But the more urgent question is how far natural coincidence—*i.e.* pure accident—could be expected to produce such a precise concurrence as has been shown.

In the present case the mathematical probabilities would appear well against the theory of chance.

We have the fact of one group of measures in common between the old and the mediæval builders, and other groups allied to these by geometry of areas.

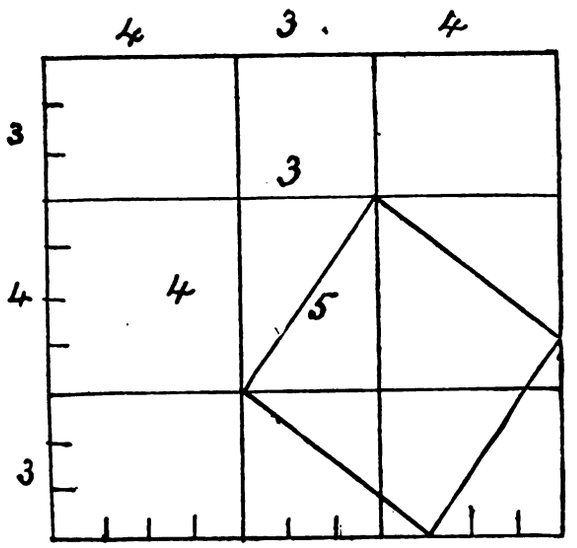
The operative guilds of the Middle Ages cherished many "trade" secrets—mysteries of their craft. Some of these were accredited with a symbolic or religious significance, and accordingly venerated. Among these the law of triangular proportion, as exemplified in the figure of the Vesica Piscis, seems to have been a peculiar object of regard. Dr. Oliver, whose works on Masonry are full of sound learning, says of this figure that it constituted "the great and enduring secret" of the Masonic brotherhoods. Yet what was this but the knowledge of the Mean Proportional between One and Three, and its arithmetical expressions?*

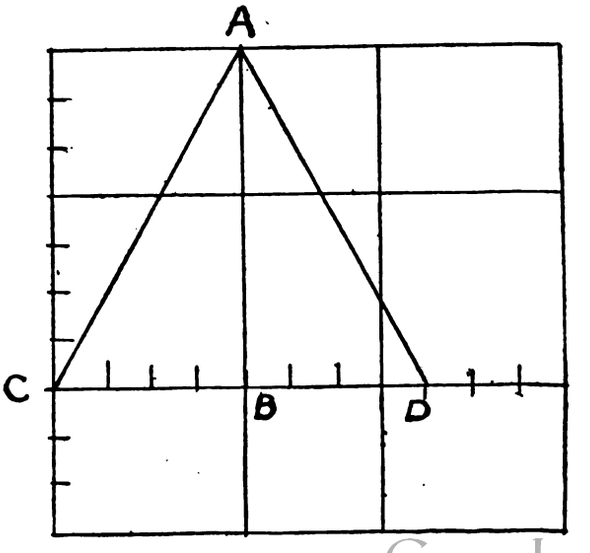
But it may be that the secret implied the use of a second scale of measure for sacred buildings concurrently with the overt scale of feet and inches; and, if so, this second scale was a scale of cubits, and could be no other, since the royal cubit of 20″.6 is, on this arithmetical system, shown to have been employed, the mean proportional between the foot of 12″ and the yard of 36″.

To sum up, the evidences offered from a geometric source are evidences for two fixed and related standards of measure in mediæval works—viz. the British foot of 12 in., and that of 13″.2 in., which was at the same time a common building measure here, and was the foot of the Belgic or Germanic peoples.

These were in the fixed ratio 10 : 11, and to these was related a third and variable measure, representing the triangular proportional, and which was the approximate mean between the 12″ foot and the yard of 36″.

* Always symbolic of the Trinity. It is but the counterpart of the triplicity of ratio in the Yard and Foot, paralleled in Egypt by the Mahi (cubit) and the Xylon, or 3-cubit measure.





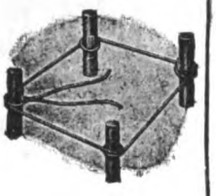
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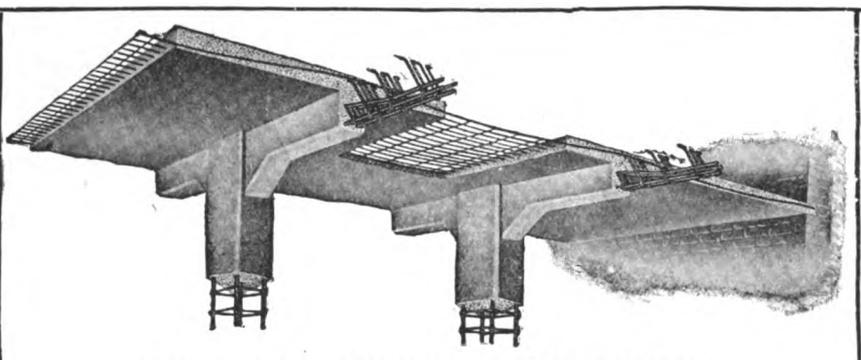
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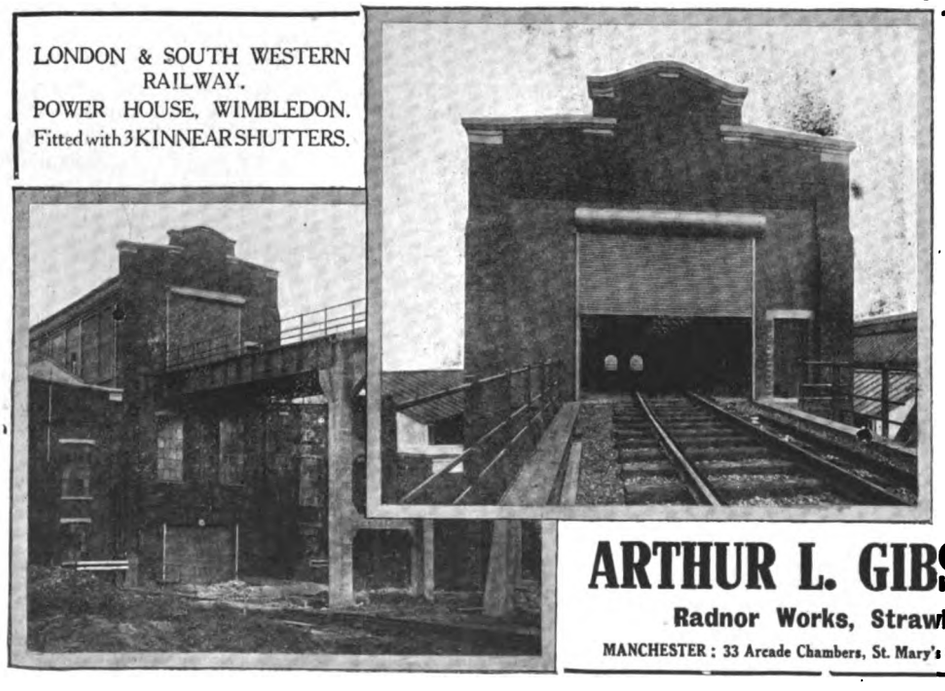
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THE REGENERATION OF THE VILLAGE.

By Professor S. D. ADSHEAD, M.A., F.R.I.B.A.

AT the National Congress on Home Problems after the War, held at Caxton Hall, London, under the auspices of the National Housing and Town Planning Council, the following memorandum on "The Regeneration of the Village" was submitted:—

Amongst the many problems that will arise after the war in connection with unemployment and the better organisation of labour and exchange, those bearing on agriculture are by no means the least important. There may be some who will consider that this question in its relation to the discharged sailor and soldier has been fully dealt with in the report of the Committee appointed by Lord Selborne to consider a scheme for the settlement of ex-service men on the land. So it has, but we must regard it from a wider standpoint. The report, within the scope of its reference, is certainly practical, and deserves the fullest consideration of the Government, but it contains one fault which nullifies the value of its recommendations; it is over-cautious. The risk of speculation on the part of the State has been too carefully eliminated, leaving the extent of its operations, at any rate at the outset, so narrow that failure may result, not from its impracticability, nor owing to any lack of forethought as regards plan and method, but from the very modesty of the endeavour. Its propositions are scarcely sufficiently attractive. For instance, nothing at the outset which would be regarded as in any sense tempting seems to be offered to the ex-service man who, although without capital, possesses discharge-sheets proving exemplary conduct, and who may already possess considerable knowledge of how to cultivate a small piece of land. Such a man might represent a fairly numerous and certainly important class, and yet he is prevented from taking up a tenancy for lack of an arrangement whereby he could be advanced, or even presented with, quite a small amount of capital to give him a start.

And to those who have had no experience whatever, or very little, is there offered anything more attractive than the present poorly paid wage of the hired agricultural labourer (if that)?

But besides incurring a risk of failure in its lack of trust and reliance on character and personality, it is inadequate in its scope, in that it does not provide work for even the most eligible of ex-service men, proposing, as it does, in the first instance (the crucial time when the ex-service man will need the immediate assistance of the State) to deal merely with some 300 cases. Certainly it suggests an extension of the scheme, and possibly a rapid extension, but this would be at a time when the question had become one, not merely of disbandment and employment, but the much wider one of agricultural reform. It is, therefore, with this larger issue that we are really confronted, and the matters to be dealt with naturally divide themselves into three heads:—

(1) Agricultural methods of farming, including finance and education; (2) transport and marketing; (3) labour and housing.

Agricultural Methods and Farming.—With regard to the first question, "Improvements in Methods of Agriculture and Farming," observation seems to show that there is a tendency to-day for the farmer who has accumulated capital to acquire adjoining farms, and so work three or four farms originally worked independently. But in doing this he under-cultivates. Evidence is overwhelming in showing that such large acreages under one tenancy are undermanned, underworked, and under-cultivated.

Authorities with such varied experiences as Mr. Rowland Prothero, the Hon. Edward G. Strutt, Mr. Christopher Turnor, Mr. Charles Bathurst, the Duke of Marlborough, and many others, are all agreed about this, and the general consensus of opinion seems to be that there is a tendency in the agricultural industry for farming to succeed on the sweating system, for the farmer who works large farms to employ as few hands as possible, for him to pay low wages, work unscientifically, and carry on an uneconomic sort of cultivation. With such a system it is quite easy to understand how it is that the small farmer who attempts the same system on a small acreage goes under.

On the other hand, evidence seems to be overwhelming in proving that when quite small farms of about fifty acres are worked by the farmer himself, and perhaps one labourer, or a son, there is a far greater output per acre: a personal interest is taken in the work entirely lacking under the capitalised system, and agriculture becomes a profitable undertaking.

In the report of the Land Enquiry Committee we read: "In the first place we have considerable evidence to show that in all parts of the country there is much land under-farmed by farmers who attempt to cultivate too large an area. Not only does such land produce less, but it employs fewer people than it would do if it were broken up. Of course it is sometimes an advantage to have large farms under a really capable farmer with plenty of capital, and some land is especially adapted for large farming. When proper allowance has, however, been made for such cases, there is no doubt that often the land is seriously under-farmed because farms are too large." But just as it is difficult to draw a hard-and-fast line between the large and small capitalist farmer, so it is difficult to distinguish between the small farm that is worked almost entirely by the farmer himself and the recognised small holder. Small holdings again merge into allotments, and the smaller the holding generally the more intensive the culture. Small holdings have undoubtedly received a great impetus from the Small Holdings Act. The total land held by the Councils under this Act is 195,499 acres, or about 44 square miles, and rather less than half of this is leased. The counties that hold most are Norfolk, Cambridge, Devon, Somerset, Lancashire, Wilts, and Yorks. Middlesex and West Sussex merely hold 219 acres.

Their average size is thirteen acres. As a rule the holder does not support himself entirely by his holding, and 20 per cent. of the holdings have houses upon them to the number of 2,510. Of these 1,736 were purchased by the Councils with the land; and 774 have been erected, 75 in Surrey, 66 in Cheshire, 58 in Norfolk, 48 in Lincolnshire, 38 in Glamorgan, and 36 in the West Riding of Yorkshire. The total erected in 1914 was 159.

The small holder under the County Council seems to be a fairly prosperous individual, as we are informed in the last report of the Board of Agriculture (from which these statistics were extracted) that only 1 per cent. of the tenants have proved unsatisfactory.

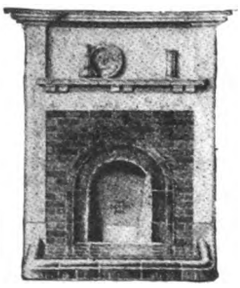
It should also be borne in mind that a great deal of valuable assistance can be secured from architects. There is unfortunately very little to do for this profession at present, especially for those architects who specialise in cottage building, and if competitions were invited for designs of houses to meet such requirements as Local Authorities may decide upon it should be possible to get most helpful plans and suggestions at a small cost.

But when Local Authorities are brought to see that this work is part of a national duty they will desire, before taking action, to consider two things:—Firstly, What is likely to be the cost of building at the close of the war; and, secondly, at what rate will they be able to borrow money?

As regards the first of these questions it is almost impossible to form an idea of what will be the position at the close of the war. On the one hand, there may be an urgent demand for building to replace destroyed buildings and to erect new buildings, the demand for which has shown itself since the war started—or which has been held in abeyance during the war. Against this will be the fact that there may be little private capital available for any purpose.

This question of the cost of building will have to be faced at the time, but as our concern in getting houses built for the people is largely to prevent unemployment

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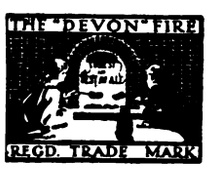


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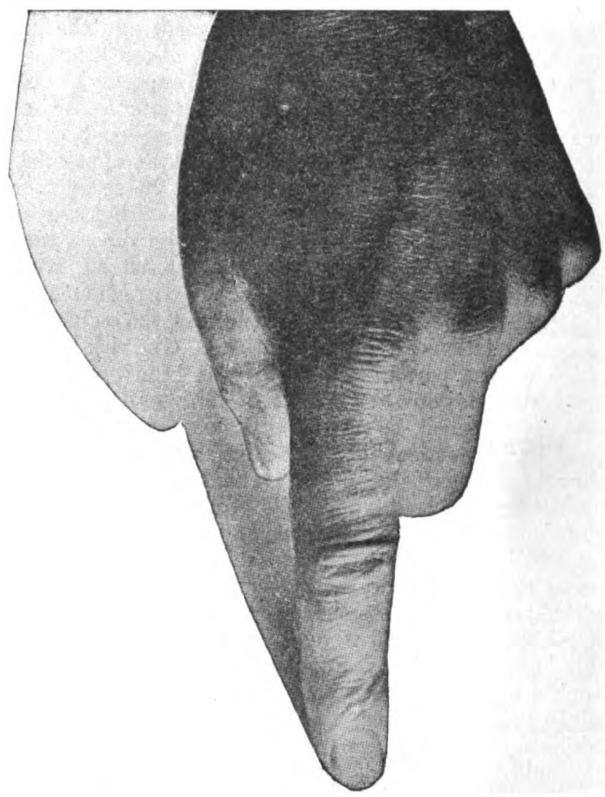
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in the building trade when the men return from the war, it may be submitted that if there is this unemployment it is hardly likely that at the same time the cost of building will be very great. Moreover, the building of cottages is largely a matter of local trade, and only in woodwork, and, possibly, in metal work, is it likely that prices through scarcity will be excessive.

But the second point—i.e. knowledge as to the rate at which money can be borrowed, is one in regard to which most Local Authorities will insist upon having information before they go to the trouble of getting options on land and preparing schemes and plans for the building of working-class dwellings.

Now it is unlikely that at the end of the war the rate of interest at which money can be borrowed in the open market will be less than 6 or 7 per cent. It would seem, therefore, to be imperative that we should look to the Government for the provision of cheap money for the purpose of building houses in order to secure that, in a period in which the flow of private capital will be limited and the rate of interest high, it will still be possible to continue the building of houses to be let at rents which workmen can afford to pay.

(To be continued.)

ARCHITECTS AND MILITARY SERVICE.

A NUMBER of members of the Royal Institute of British Architects who are about to enlist in the Army, or to be summoned to the Colours under the operation of the Military Service Acts, have called the attention of the Council to the desirability of making arrangements to enable them to enlist in a selected corps, so that they will have the advantage of serving with a number of men of their own class and profession.

With the approval of the Central Recruiting Depôt, arrangements have accordingly been made with the Queen's Westminster Rifles, one of the oldest and most distinguished of the London Territorial Regiments. Applicants must, of course, be fit for general service, and must be capable of passing the tests imposed by the Regiment.

Any members (whether attested or unattested) who desire to take advantage of this opportunity should apply immediately to the Officer Commanding, Administrative Centre, Queen's Westminster Rifles, 58 Buckingham Gate, S.W.

They are invited to call on any week day (except Saturday) at 2 P.M., and they should state that they desire to take advantage of the arrangements made with the Royal Institute of British Architects.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BEDFORDSHIRE.

Bedford.—House, Goldington Road, for Mr. J. J. Stanton.

Mess room and lavatories, for Messrs. Robertson & Co., Ltd.

CORNWALL.

Camelford.—House, for Mr. T. Wills.

CUMBERLAND.

Workington.—Offices: extension for the Workington Iron and Steel Company.

DEVON.

Alphingham and Ide (between).—Proposed small-pox hospital for Exeter.

DORSET.

Weymouth.—No. 104 St. Mary Street: re-building for the International Stores, Ltd. (London).

DURHAM.

Cleadon.—Proposed infectious diseases hospital. South Shields Borough Engineer.

West Hartlepool.—Premises, Stockton and Ward Streets: alteration for Mr. L. Robson.

HAMPSHIRE.

Bournemouth.—House, Dunbar Road, for Mr. H. Long.

No. 83 Hankinson Road: additions for Mr. G. Harding.

House, Keswick Road, for Rev. K. D. Radcliffe.

Four maisonettes, Green Road. Mr. A. Barnes, builder, 33 Palmerston Road, Boscombe.

Southampton.—Factory for the Ford Motor Co., Ltd. (England).

KENT.

Gillingham.—Bungalow, Hampstead Road, Wigmore, for Mr. Filmer.

Bungalow, Orchard Road, Wigmore, for Mr. A. Masters.

Ramsgate.—General hospital: addition.

LANCASHIRE.

Chatburn.—Thirteen cottages for the Chatburn Manufacturing Company.

Grindleton.—The "Buck" Hotel: alterations.

LINCOLNSHIRE.

Lincoln.—Offices, Waterside South, for Messrs. Ruston, Proctor & Co., Ltd.

Store, Canwick Road, for Messrs. Robey & Co., Ltd.

Workshops, Waterside South, for Messrs. Clayton & Shuttleworth, Ltd.

NORTHAMPTONSHIRE.

Hardingstone.—Engineering shops, for Messrs. Blackwell & Sons.

NORTHUMBERLAND.

Hexham.—Cottages, the Hall Farm, Stockfield: additions and alterations for Lord Allendale.

Scotswood.—Unit. M. Church (£7,100). Messrs. Hicks & Charlewood, R.I.B.A., architects, 4 Mosley Street, Newcastle-upon-Tyne.

Slaley.—Slaley Cottage: additions and alterations for Mr. A. Carter.

OXFORDSHIRE.

Henley-on-Thames.—Parish church: Maul memorial vestry.

SHROPSHIRE.

Bishop's Castle.—Premises, High Street: additions and alterations for Messrs. Bowen & Son.

SOMERSET.

Yeovil.—Motor garage, Hendford Grove. Messrs. Pippard & Purchase, builders, Wyndham Street.

STAFFORDSHIRE.

Walsall.—Foundry, Hatherton Street: extension for T. L. Hale, Ltd.

Offices, Vicarage Street: additions for O. D. Guest. Ltd.

Office, Wolverhampton Street, for Messrs. G. Boot & Son.

SUSSEX.

Hove.—Factory for the Standard Tablet Company.

Willingdon, Lower.—House, Lucks Land. Mr. S. G. Scales, architect, 7 Bolton Road, Eastbourne.

Worthing.—"Fairlawn," Chapel Road: additions and alterations for Messrs. Jordan & Co.

WARWICKSHIRE.

Coventry.—Factory, Far Gosford Street, for Pistons, Ltd.

WORCESTERSHIRE.

Kidderminster.—The "Royal Exchange" p.h., New Road: extensions for the Wolverhampton and Dudley Breweries, Ltd.

YORKSHIRE.

Keighley.—Foundry, Royd Works, for Summerscales, Ltd.

WALES.

Aberystwyth.—Derwen House, Thespian Street: additions and alterations, for Mrs. Evans.

Cardiff.—King Edward VII. Hospital: Orthopædic Department extension.

SCOTLAND.

Mossend.—Proposed two hundred houses for Lanarkshire C.C.

Portobello.—Electric Light Station, Westbank.

Sanquhar.—Six houses, Howie's Road, for the Sanquhar and Kirkconnel Collieries, Ltd.

IRELAND.

Carrickfergus.—House, Irish Quarter West, for Mr. C. Murphy.

Larne.—Twenty-three houses, Old Glenarn Road, for Mr. W. J. Lemmon.

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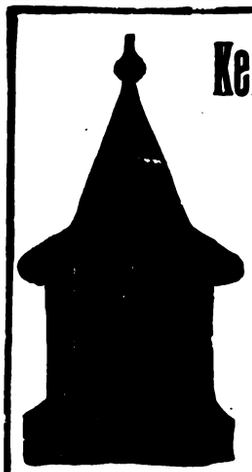
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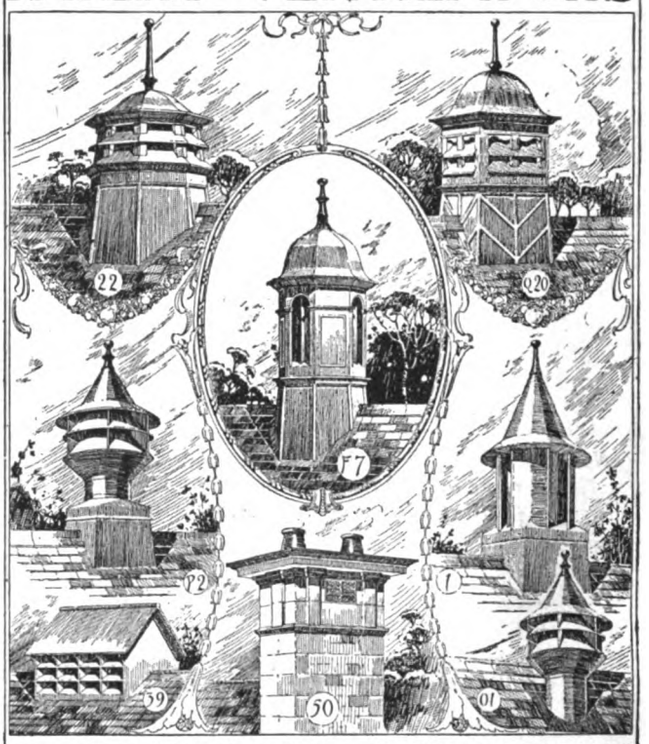
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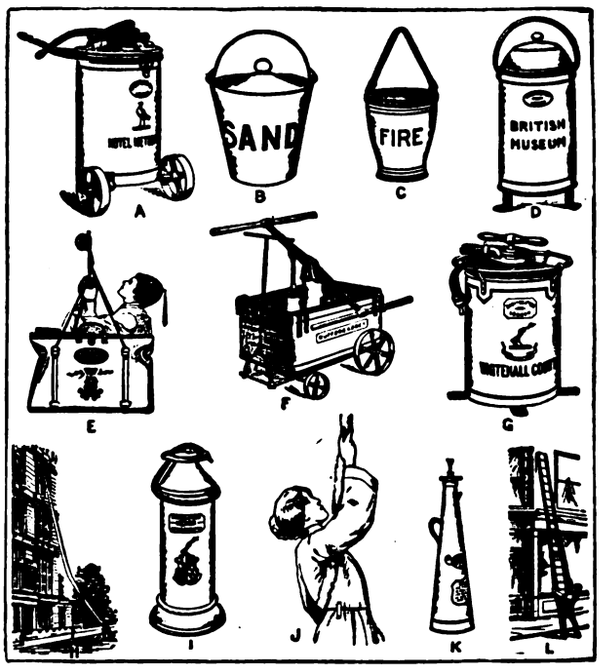
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THE ARCHITECT

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FORTHCOMING EVENTS.

Friday, May 26.

Town Planning Institute : Second Annual General Meeting at 92 Victoria Street, S.W. Adjourned discussion on papers by Messrs. Aldridge and Shawcross on "The Town Planning Proposals of the Urban Land Report," at 5.45 P.M.

Monday, May 29.

Surveyors' Institution : Annual General Meeting, at 5 P.M.

Monday, June 5.

Royal Institute of British Architects : General Meeting (Business), at 4.30 P.M.

THE DESTRUCTION IN DUBLIN.

OUR contemporary, "The Irish Builder and Engineer," gives a very clear description with many illustrations of the damage done in the city of Dublin during the recent rebellion. The actual destruction has been almost confined to the area including Sackville Street, Lower and Upper, and the streets leading into it. Outside this district the damage done to houses is not very extensive, if we except a couple of houses at Clanwilliam Place, which were completely destroyed in the battle of Mount Street Bridge.

Fortunately, the loss to the city of buildings of historic or architectural interest has been surprisingly small. The Custom House, despite its close proximity to Liberty Hall, the Bank of Ireland, Trinity College, and the Four Courts have escaped. The buildings within the injured area, whose destruction, on architectural grounds, might be lamented, the General Post Office in Lower Sackville Street, the Royal Hibernian Academy House, and the Presbyterian church in Lower Abbey Street still maintain their façades, though their interiors are burnt out. It is somewhat remarkable that the granite work of these buildings is not more seriously injured than it is, as this material usually suffers severely in a conflagration, but the explanation in this case probably is, that the fire attack was on the interior of the building and not the outside.

The greater part of the damage in Sackville Street is in the lower half of that thoroughfare extending from the O'Connell Bridge to the Nelson Pillar, and is most severe on the eastern side, of which, as far as North Earl Street, opposite to which stands the Nelson monument, little now remains but a few front walls. On the further side of North Earl Street, the eastern side of Upper Sackville Street as far as Cathedral Street is involved in similarly complete destruction. Beyond that the damage is limited to bullet holes in the window glass and bullet marks on walls and doorways.

Returning by the western side the quarters of the Young Men's Christian Association and the Catholic Club in Upper Sackville Street were shelled, and a couple of large shell holes are visible in each. Then in Lower Sackville Street the General Post Office has been completely destroyed, with the exception of the outer walls of granite which appear to be quite sound and the portico, the columns of which have been extensively chipped by bullets, but otherwise appear to be uninjured. Between the General Post Office and Middle Abbey Street all the houses have been destroyed, though the shell of Manfield's newly built bootshop at the corner of Middle Abbey Street still stands. It is a heavy brick structure supported on a light steel frame work, and has taken an outward list, some of the stanchions having bent in the heat of the fire. In the southern part of Lower Sackville Street, on the western side, with the exception of the buildings nearest to Abbey Street, the houses have suffered comparatively little, except from rifle bullets or machine-gun fire, the damage from which is superficial.

In the streets leading from Sackville Street much damage has been done. Eden Quay, for some distance, is a mass of ruins. Lower Abbey Street, in which stood our contemporary's offices, is as far as Marlborough Street no more than a collection of dismantled fronts. So, too, with the other streets for a considerable distance —Middle Abbey Street, Prince's Street, Henry Street, and North Earl Street. In some cases even the front walls have collapsed, and what were once buildings are now no more than heaps of bricks and rubbish.

It is to be noted that the destruction which has overtaken so many complete blocks in the Sackville Street area is due to a conflagration which broke out and spread rapidly from house to house unchecked. The vast majority of the houses were old and of very inflammable construction and must have gone like matchwood, whilst each block of many buildings was, in insurance language, a single risk from the absence of anything like efficient fire-resisting divisions or fire-resisting construction of individual buildings. Much old timber construction was in existence, and where steel and iron were employed this was lacking in proper protection.

There appears to be some doubt as to the initiatory cause of the conflagration, but the most probable explanation is that the houses were set on fire by "hooligans" after looting. Shell-fire may have been responsible in some cases for the commencement of fires, but, if so, there are now no visible traces of the shells, such as may be seen at Liberty Hall, the Catholic Club, and the Young Men's Christian Association.

Serious though the destruction in Dublin's chief thoroughfare has been from the point of view of property owners and traders, it is a matter of congratulation that, architecturally considered, the city has not suffered more than it has done.

There are many important questions to be settled in connection with the rehabilitation of Dublin's great business area. First, the financial. It must be the view of every fair-minded person that the pecuniary burden of rebuilding should be shouldered by the Government, not only because it is by their supine lack of active prevention that the catastrophe has occurred, but because the outbreak must justly be considered as an incident of the war, and so the material damage as part of the national loss that the war has brought. Unfortunately, when we speak of the pecuniary burden being shouldered by the Government, it does not fall exclusively upon them individually, but is only one more piece of waste due to their ineptitude.

The degree of financial responsibility for compensation which the Government has decided to assume is expressed in the following communiqué issued by the Under-Secretary to the Lord Lieutenant :—

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"In connection with the destruction, both in Dublin and elsewhere, of buildings and their contents, the State will assume, as the maximum of its ex gratia grant, the same liability as would have fallen on the insurance companies if the risk had been covered by the policies in force at the time of the recent disturbances.

"Accordingly, His Excellency the Lord Lieutenant has decided to appoint a Committee—(*a*) (i.) to ascertain what were the sums covered for ordinary fire risks, by insurance policies in force at the time of the destruction of the property; (ii.) to advise what part of such sums would normally have been paid by the insurance companies if the destruction had been caused by accidental fire; and (*b*) having regard to the information obtained under the foregoing heads (i.) and (ii.), to advise how, on analogy, the several claims of uninsured persons could fairly be dealt with.

"For the foregoing purposes looting may be deemed to be burning, but no consequential damages of any kind are to be taken into account.

"In no case will any grant be made in respect of the property of persons in complicity with the outbreak."

The necessity for adequate control of the rebuilding of the devastated area is recognised both by the leading men of Dublin and by the Prime Minister, and at a conference held at the Mansion House, Dublin, at which were present the principal officials of the Corporation, representatives of the Local Government Board, the Chamber of Commerce, the Royal Institute of Architects in Ireland, the Architectural Association of Ireland, and the Housing and Town Planning Association of Ireland, a suggestion made by the Lord Mayor was considered and adopted, that the Government should be asked to take such immediate action as would prevent the rebuilding of destroyed premises without reference to a general improvement scheme. Mr. Asquith, in conference with the Lord Mayor and the Under-Secretary, expressed his desire to provide every necessary facility without delay, and it is accordingly expected that the necessary legislation which the Prime Minister has undertaken upon behalf of the Government will be presented to Parliament. The powers sought, if approved by Parliament, will enable the Corporation and the public departments concerned to meet the present emergency rapidly and effectively.

The general opinion in Dublin seems to be that a small and business-like Commission should be constituted to regulate the work of rebuilding, on which the Corporation should be represented, but which it should not be allowed to dominate against the opinions of business men and experts. One not unimportant question which such a Commission would have to decide, particularly in view of the considerable divergence of opinion already revealed, is the future of the Nelson monument. Some advocate its removal to another locality, others, including Sir Thomas Manly Deane, favour its retention in Sackville Street. The most obvious solution, its utilisation as the focus of a "place" between Upper and Lower Sackville Street, is complicated by the wish that everyone must feel, that the façade of the General Post Office should not be mutilated.

Another knotty point is the decision between uniformity and variety in the design of the façades of the new buildings in Lower Sackville Street. The former makes for dignity, the latter for piquancy, and, considering the experience of the London County Council in Kingsway, for the line of least resistance in the accommodation of vested interests and varying requirements of tenants. Should this latter course be adopted, we may hope that the variation of designs may not be allowed to extend so far as to repeat the jumbled collection of samples that Kingsway now presents.

THE Aberdeen Town Council on Monday last authorised their water engineer to proceed with the detailed surveys and the preparation of the working plans and specifications in connection with the construction of a new aqueduct and relative works, so as to be ready to proceed with the scheme after the war.

NOTES AND COMMENTS.

IN his anniversary address to the Society of Antiquaries, the President, Sir Arthur Evans, has taken the standpoint that the war should make no difference to the friendly relations previously subsisting between the savants of Germany and those of our own country. It is all very well to say, as Sir Arthur puts it, that "In these times of intolerable provocation we, and members of kindred societies, who stand on the neutral ground of science, have a high duty to perform. That there should be a serious and prolonged estrangement of the peoples of the British Commonwealth from those of the German Empire has become inevitable. But this does not affect the immutable condition of all branches of research, which is their essential interdependence. We have not ceased to share a common task with those who to-day are our enemies. We cannot shirk the fact that to-morrow we shall be once more labourers together in the same historic field. It is incumbent on us to do nothing which should shut the door to mutual intercourse in subjects like our own, which lie apart from the domain of human passions, in the silent avenues of the past."

This is very pretty special pleading and "high falutin," but ignores the outstanding fact that it is precisely the savants and the scientists of Germany who have imbued the whole German people with the idea that they are a superior race to the rest of the world, that accordingly they are justified in imposing by brute force, by unblushing mendacity, by the most appalling cruelty and harshness their will and their "Kultur" on the whole of humanity, civilised and uncivilised. All the research, all the science of Germany is directed to but one end, the aggrandisement and the overlordship of the German people and the Prussian ruling caste over all other nations. Sir Arthur Evans and those who think with him have clearly failed to grasp the significance of German actions in Belgium and to realise that all that the Society of Antiquaries of England most cherish would, if Germany were to win the war, be transferred to the keeping of Dr. Bode and other German savants, that all the most valuable treasures of the British Museum, the Victoria and Albert Museum, Burlington House, and the other repositories of portable ancient monuments throughout the country would go to enrich the museums of the German fatherland. Only if the President and Fellows of the Society of Antiquaries are prepared to pay this price for the maintenance of mutual intercourse with German savants can they honestly retain "that noble class" amongst their honorary Fellows. It is ridiculous for Sir Arthur to urge that the subjects of the antiquaries' research "lie apart from the domain of human passions" when the conduct of the present occupants of Belgium abundantly proves that the objects of an antiquary's study and delight are irresistible to the Prussian passion for loot.

The Midland Reafforesting Association, in their report for 1915, state that, in spite of the war and the consequent shortage of labour, the year has not been entirely barren. The replanting of Moorcroft has been completed, three school playgrounds and a churchyard have been planted, necessary repairs have been carried out, and an important change in organisation has been made in order that the association may be better able to cope with the heavy work that is sure to be thrown upon it at the return of peace. The trees planted at Moorcroft are doing fairly well, though there has been a rather heavy loss among the poplar and willow cuttings, and the second Government grant of £50 has been received.

"Every day," say the committee in appealing for support, "tends to emphasise the dependence of this country upon imported timber of all sorts, and it is impossible not to consider how different conditions, and possibly prices, might be, had systematic planting been general, or even if it had been limited to pitbanks. It is just twenty-five years since the late Professor W. R.

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Fisher, to whom the association owes so much, first advocated the planting of South Staffordshire pit-mounds, and what a crop of stout young poles there would now be had he been taken at his word! The first plantations formed by the association are but eleven years old, and those owned by it not more than eight or nine years old. Yet one of these has risen in value between 1909 and 1914 from £26 to £42, and in a few more years will have saleable timber. Surely the lesson is plain. The small outlay of some £5 or £6 to every acre of derelict land will yield a profit and restore beauty while it is increasing the resources of the country "

The late Herbert Horne, architect, art writer, and connoisseur, who died in Florence in the month of April, has left to the Italian Government the beautiful Renaissance Palace at the corner of the Via dei Benci and Via dei Fossi, which he acquired and restored in the most perfect taste, together with the large collection of furniture, pictures, china, majolicas, bronzes, designs, &c., contained in the palace, and has bequeathed funds for the upkeep of the palace and the collection, which are to be called the Horne Museum. The collection is said to be of great value, the artists whose drawings are to be found there including Raphael, Rubens, Vandyke, Tiepolo, Salvator Rosa, &c., while the other objects have been brought together with artistic taste and knowledge, and, besides being most useful for the study of art, present in their entirety an admirable picture of a Florentine palace of the Renaissance.

India is a golden field at the present time for the town-planning "expert," and Professor Geddes, of University College, Dundee, has given to the "Dundee Advertiser" an account of some of the things he has done during a recent stay in that country, and of the prospects of town-planning there.

Professor Geddes stated that, amongst other things, he had organised an exhibition in Calcutta, and had prepared a report on the planning of Dacca, the capital of Eastern Bengal. There was also a scheme for a new railway town outside Calcutta, with garden villages instead of the present "coolie lines," and various other improvements. He had conducted practical classes for engineers and surveyors from provincial towns.

The vast population of Bengal was largely agricultural, but industrial conditions were developing, and it is desired that the new districts and towns should be laid out to the best advantage. Bengal, he said, is the land of jute, and jute is threatening Calcutta from a town-planning point of view, as it has destroyed most of the other towns on the Hooghly. Interest in town-planning is beginning to show itself. The Governments are taking the matter up, and the educated natives are also taking part in it. There is an extensive business expansion going on in and around Calcutta, especially in connection with the jute trade, and the laying out of new districts is forcing itself on the attention of the authorities.

On leaving Bengal, Professor Geddes organised another exhibition at Nagpur, the capital of the Central Provinces. Nagpur is not a great or a fine city, but it is the seat of a Government, and is developing. Then he went to Lucknow, a city famous for its magnificence, and especially for the part it played in the Mutiny. A long line of kings have embellished it with gorgeous palaces and public buildings, and history and the romance of war have given it a renown that will never fade away. The population has dwindled since the time of the Mutiny. Last October it suffered the loss of 20,000 houses in a single night by an unparalleled rainstorm, the water collecting on the flat roofs, and by its weight bursting the walls. Advantage is being taken of the disaster to adopt town-planning principles in the rebuilding of the houses, and the people are being encouraged to occupy more space than before.

Lucknow is not an industrial centre; but Cawnpore, another historic town, is very much so. It is an immense centre for the collection and distribution of cotton, grain, hides, and raw materials generally. Sir Alexander M'Robert, an Aberdonian, has great wool and cotton mills there, and is doing much for the benefit of his workpeople.

The old-fashioned houses of India, Professor Geddes explained, are very picturesque. There is much fine carving, both in wood and stone, about them. But the old handicrafts are dying out, and the people are only getting a bare subsistence under modern industrial conditions. The tragic side of the industrial age is becoming more conspicuous in Indian cities than the other side, except in special cases.

The most important work the Professor has at present in hand is to sketch out plans for the new University at Benares. Three-fourths of a million sterling have been collected for it. His first advice for that great new University is to build mainly in mud, replacing it by stone or marble afterwards, as funds permit. He has also been collaborating in plans for Baroda, the capital of the well-known Gaekwar. This gentleman is unpopular in some respects, but he is also a very distinguished and progressive ruler.

Professor Geddes was also in Bombay, where great expansion is at present going on. Enormous water-power is got from mountains behind the town, and is being used for the generation of electricity to drive the cotton mills. The manufacture of cotton is developing very rapidly as cheaper power is brought in, so that the question of town-planning is very important there. He has to report on it next year.

The responsibility of local authorities for an adequate system of drainage, properly maintained, in the areas under their control, is illustrated by an action brought by a firm of spinners against the Halifax Corporation. Mr. Justice Atkin, in giving judgment, said the plaintiffs' claim was in respect of damage to goods by a storm on July 1, 1914. The hearing of the action commenced at the Leeds Autumn Assizes, and the case was then adjourned to London. The case involved questions of fact and law. As to the position of the plaintiffs' land, he was not satisfied that it had to bear more than its reasonable portion of any water that fell upon it in times of rain. The plaintiffs complained of three things, viz., the construction of the roads, the maintenance of the roads, and the construction of the sewers and works to deal with the storm water. His lordship was satisfied that there was negligence on the part of the Corporation in the construction and maintenance of the roads, catch pits, &c., and therefore came to the conclusion that the negligence of the Corporation in the respects he had mentioned caused the damage to plaintiffs' goods. Next he had to deal with the Corporation's defence that the damage was caused by an act of God. Having regard to all the circumstances of this case, his lordship did not think that the present was a case of this kind. As to the plaintiffs' allegation as to the inability of the sewers to deal with the rainfall and the allegation of negligence on that head, on this part of the case he came to the conclusion that the plaintiffs had failed to establish any negligence against the Corporation. He therefore gave judgment for plaintiffs for £600 and costs.

COMPETITION NEWS.

HENRY SAXON SNELL PRIZE.—The subject given in 1915 for the essay in the competition for this prize was "Suggestions for Improvements in the Sanitary Arrangements and Appliances suitable on Board Ship for (*a*) Passengers and crew; (*b*) Cattle and other live stock." Seven essays were sent in, and they have been brought under the consideration of the Council of the Royal Sanitary Institute. The adjudicators for the competition were W. Collingridge, M.A., M.D., LL.B., A. Wellesley Harris, M.R.C.S., the late Herbert Williams, M.D., and J. J. Welch, M.Sc., M.Inst.C.E., M.I.N.A., Professor of Naval Architecture, Armstrong College (Univer-

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sity of Durham), nominated by the Institution of Naval Architects. Acting upon the advice of the adjudicators, the Council have awarded the prize offered of fifty guineas and the silver medal of the Institute to Wm. Hanna, M.A., M.D., Assistant Port Medical Officer, Liverpool, writing under the motto "Nautilus."

ILLUSTRATIONS.

"BALMADIES," COLINTON, MIDLOTHIAN.

This house was designed by Mr. M. M. Ochterlony for Lady Ochterlony on the "sun-trap" principle, and is so placed that even on its shorter circuits the sun reaches all the walls during some part of the day. The keynote is economy, not only in cube space, but also in materials and ease of working.

The external walls are 18-inch hollow brick, rough-casted; and for the roof green Buttermere slates of broken colour were selected. The stone steps and dressings, as well as the bricks, came from Hailes quarry.

The internal arrangements provide for seven bedrooms and one dressing-room, bathroom, and two lavatories on first floor, and large boxroom in the roof, hanging cupboards in all bedrooms, and plenty of press accommodation. The woodwork used is whitewood, with birch panels, stained a pleasant olive-brown. For the walls, which are distempered, Blundell's stucco paint has been employed; and excepting in the drawing-room, where they are oxidised silver, the door furniture, switches, &c., are in bronze. The whole of the ground floor, with the exception of the sitting-rooms, is laid with 9-inch by 9-inch red floor bricks; and for the hearths "Tudor" tiles have been used. In the drawing-room the woodwork is finished in ivory enamel, with walls painted silver. The fireplace has a brick surround with ornamental metal interior; above the fireplace is a picture by Mr. F. G. Cotman, R.I. The chimneypiece will be ornamented by a carved frieze.

The principal contractors engaged were: Messrs. James Milne & Son, Juniper Green, Midlothian, who executed the masonry and brickwork; Mr. John McKenzie, Newbridge, Ratho, Midlothian, the woodwork, including finishings; Messrs. John Bryden & Son, Frederick Street, Edinburgh, electric fittings and wiring; and Mr. H. Weir, Row Street, Edinburgh, plumbing.

OXFORD COLLEGE SERIES.—NOS. 162 & 163.—UNIVERSITY COLLEGE.

We complete this week our series of views of University College with photographs of the interesting Common Room and its remarkable fireplace.

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—XXI.

By Charles T. Ruthen, Licentiate R.I.B.A., M.S.A.

As one's temporary Venetian residence, as before noted, lies in the near vicinity of La Piazza di San Marco, it is found convenient to explore the right-hand bank of the Grand Canal by commencing at the Molo, that gorgeously situate gondola-stand fronting the broad Canale di San Marco.

As it is inadvisable to attempt to view all the treasures and beauties of the cathedral of San Marco, or the architectural and artistic grandeur of the Palazzo Ducale and its surroundings, in lengthy tiring visits, or in many consecutive visits, so is it not only inadvisable but unprofitable to attempt to satisfactorily explore the banks of the Grand Canal and examine its glories in long weary excursions or in excursions consecutively arranged.

Judiciously interspersed visits to the many other places of world-wide repute tend to relieve the monotony and mental confusion caused by the immense fund of interest provided by the famous edifices of extraordinary architectural interest upon the banks of this great highway, and thereby add to the intellectual profit to be obtained.

For convenience, however, these notes will deal with the buildings situate on the right bank of the Grand Canal immediately following a brief consideration of those upon the left.

Issuing instructions to the gondolier to keep to the right bank, the Molo is deserted for the time being, and the Zecca, previously mentioned, is passed which, together with the lagoon or south façade of Sansovino's famous Old Library (Libreria Vecchia), separates the Piazzetta from the Giardino Reale (Royal Garden), in passing which lafter place a view is obtained of the rear or canal-front of the Palazzo Reale or Procuratie Nuove. Adjoining this building upon a prominent corner site, and overlooking the Giardino Reale and Canale di San Marco, stands the Palazzo Giustiniani, now the Hotel de l'Europe, a fifteenth-century Gothic building of much beauty, full of exceptionally fine remnants of pointed windows.

A number of other palazzi are passed, most of which, including the by no means insignificant Hotel d'Italie with its 350 rooms (nearly all at one time parts of ancient palaces), are now hotels. And then rises the Palazzo Contarini-Fasan, with its pretty little fourteenth-century front, spoken of by the gondoliers as the "House of Desdemona"; why it is not possible to find out. This is an attractive morsel with its very ornamental arches and delightful balconies; one of the most popular houses upon the canal.

The fourteenth century Palazzo Ferro, injured much by restorations; the Palazzo Fini, a Renaissance edifice, and the fourteenth century Gothic Palazzo Gritti, are now all one large hotel.

Passing the ferry boat station of Santa Maria del Giglio, the magnificent and stately late-Renaissance Palazzo Corner della Cà Grande is seen. This huge, but perhaps somewhat depressing building is best viewed by the gondola being swerved towards the opposite bank of the canal. Expert opinion differs very considerably upon the question of the merit of this work. Ruskin wrote "One of the coldest and worst buildings of the central Renaissance," whilst another authority says, "surpassing all others in majesty, grandeur . . . and perhaps the most splendid residence in Italy." Erected in 1532 to the designs of Jacopo Sansovino, this edifice is notwithstanding all adverse criticisms a fine work of this great master. Below the level of the first cornice, the lower rusticated stage is particularly imposing; but above in the two upper stages there is a monotony and weakness in the treatment, responsible for the somewhat unsatisfactory character of the whole façade.

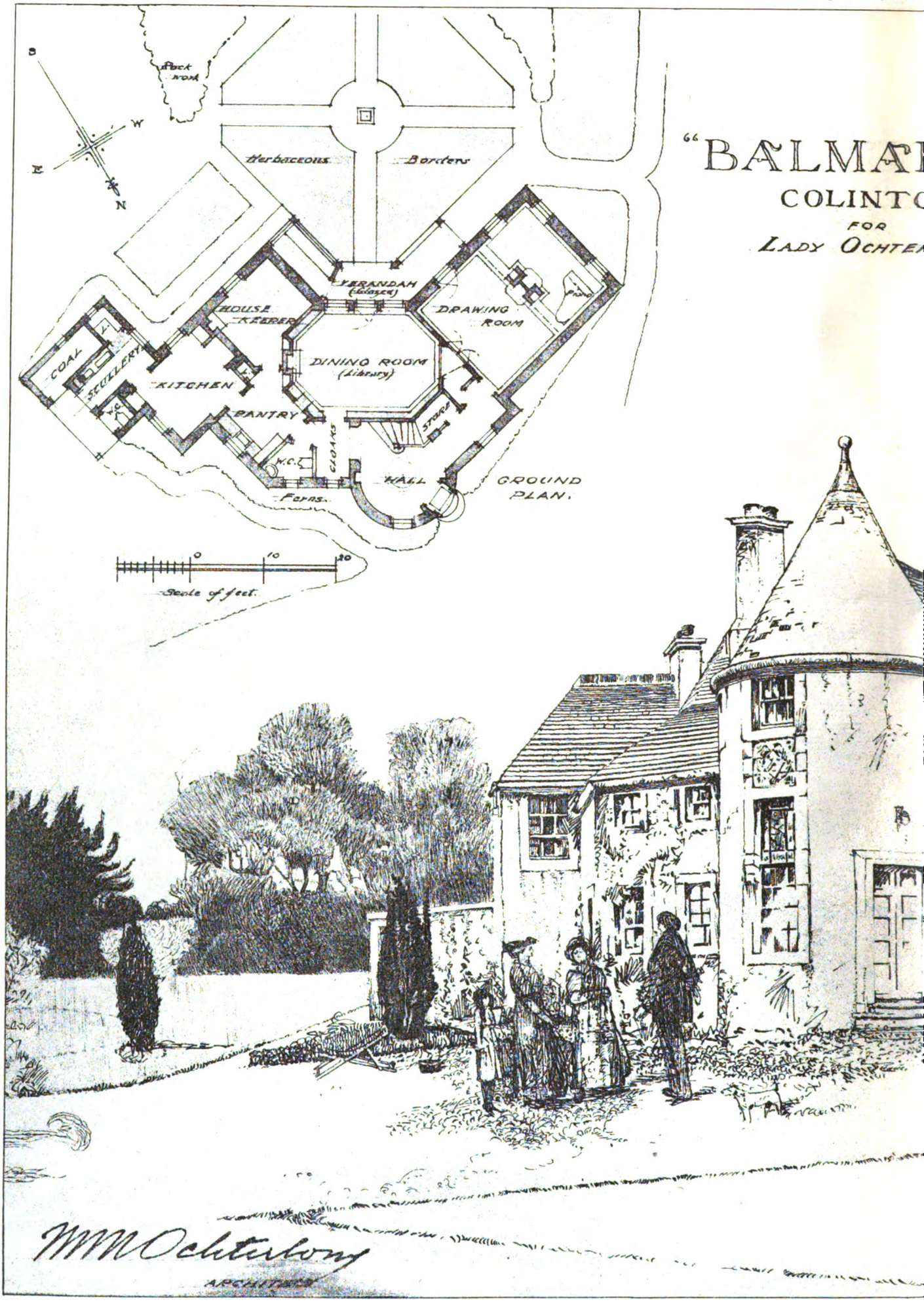
The quiet grandeur of the lower stage, compared with the sameness and comparative paltry design of the upper stages, almost makes one doubt that the whole façade was from the same hand. This building is now the seat of the Prefettura and the Consiglio Provinciale.

The Palazzo Barbaro is a fourteenth century Gothic erection with good early-Gothic second-floor windows, and much modernised balconies. Passing the Rio dell' Orso, the Palazzo Franchetti, formerly the Palazzo Cavalli, is reached. This is another example of the style of the Doge's Palace, a Gothic building of the fifteenth century, much restored about twenty-five years ago.

Just before reaching that iron structure, the Ponte di Ferro, rises the church of San Vitale, erected in 1700 or thereabouts by And. Tirali, which contains behind the high altar in the choir a very famous painting dated 1514 by Carpaccio. This represents the patron San Vitalis, the martyr of Ravenna, on horseback, with a number of other saints and the Madonna in the clouds. Passing under the bridge, Longhena is again represented by the Palazzo Levi, formerly Giustiniani-Lolin, and then rises the Palazzo Falier, a pretty fifteenth century structure.

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(Royal Scottish Academy, 1915.)

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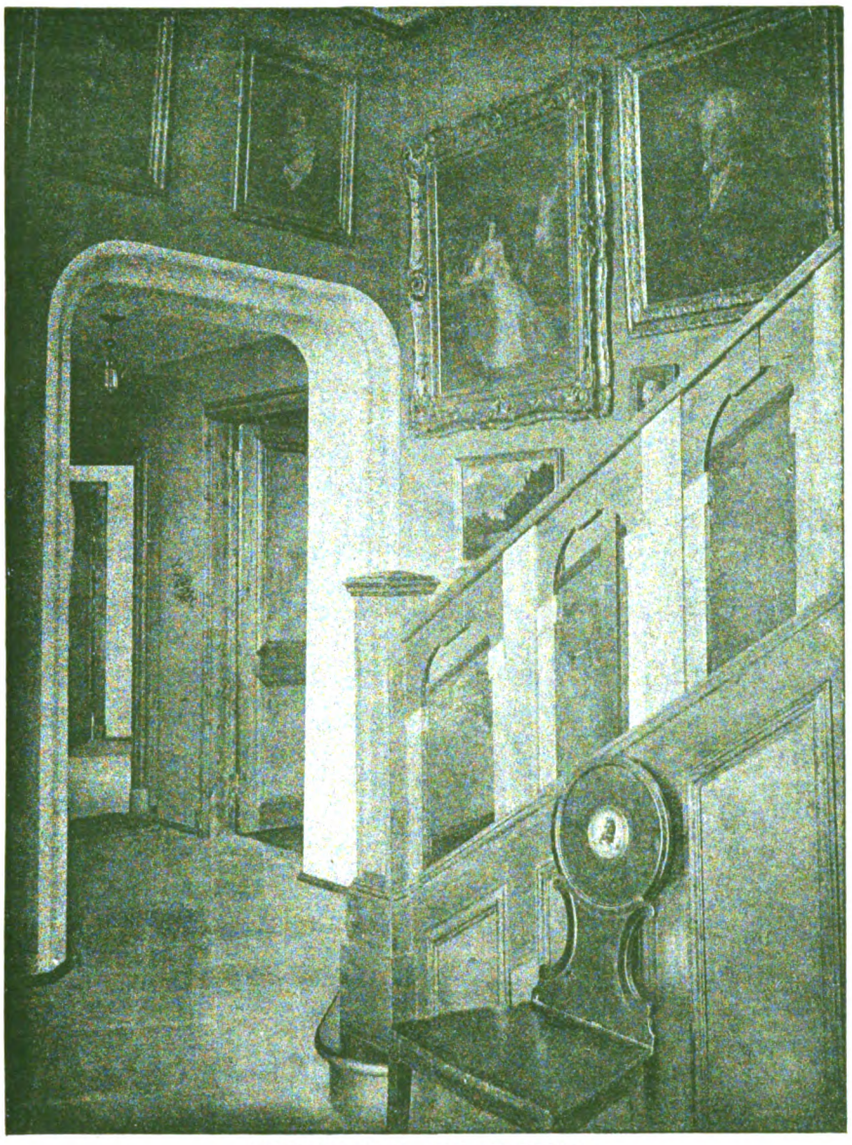
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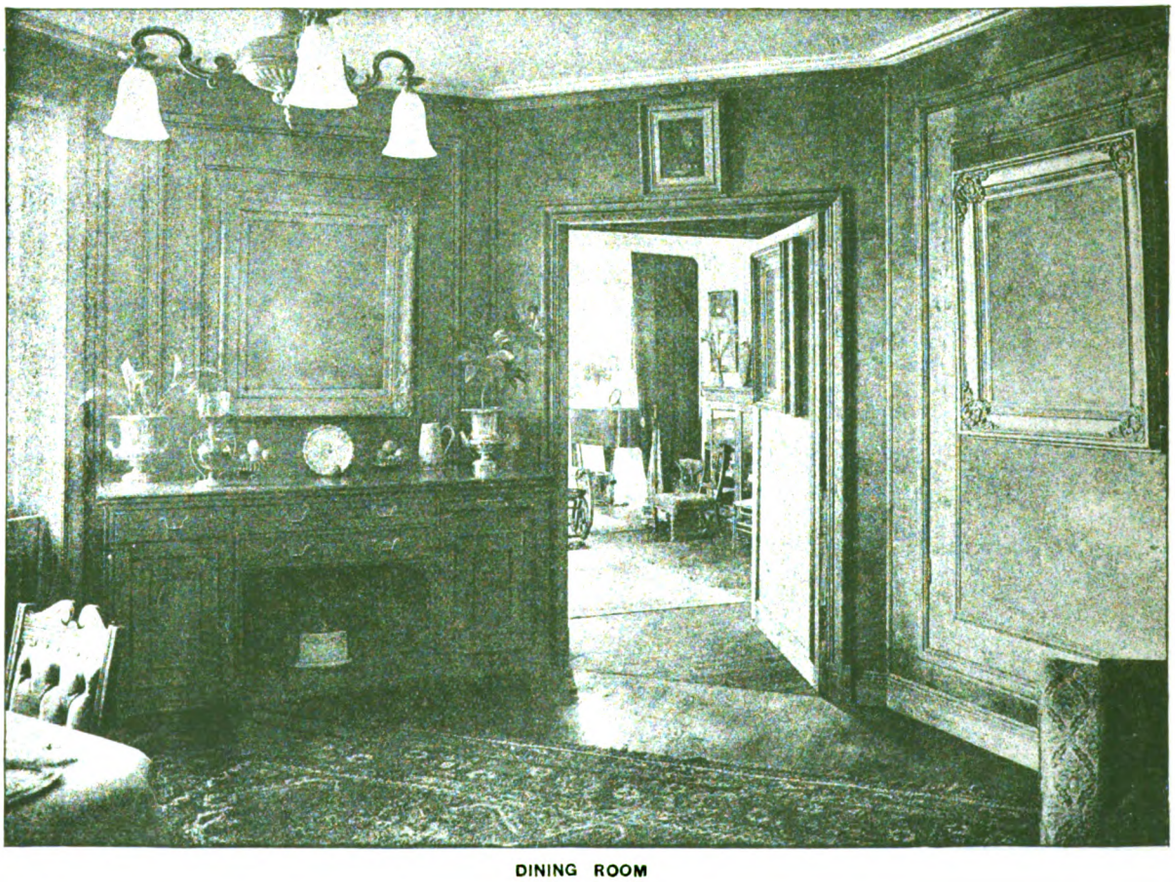
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ENTRANCE HALL AND STAIRCASE.



DOUBLE D



DINING ROOM

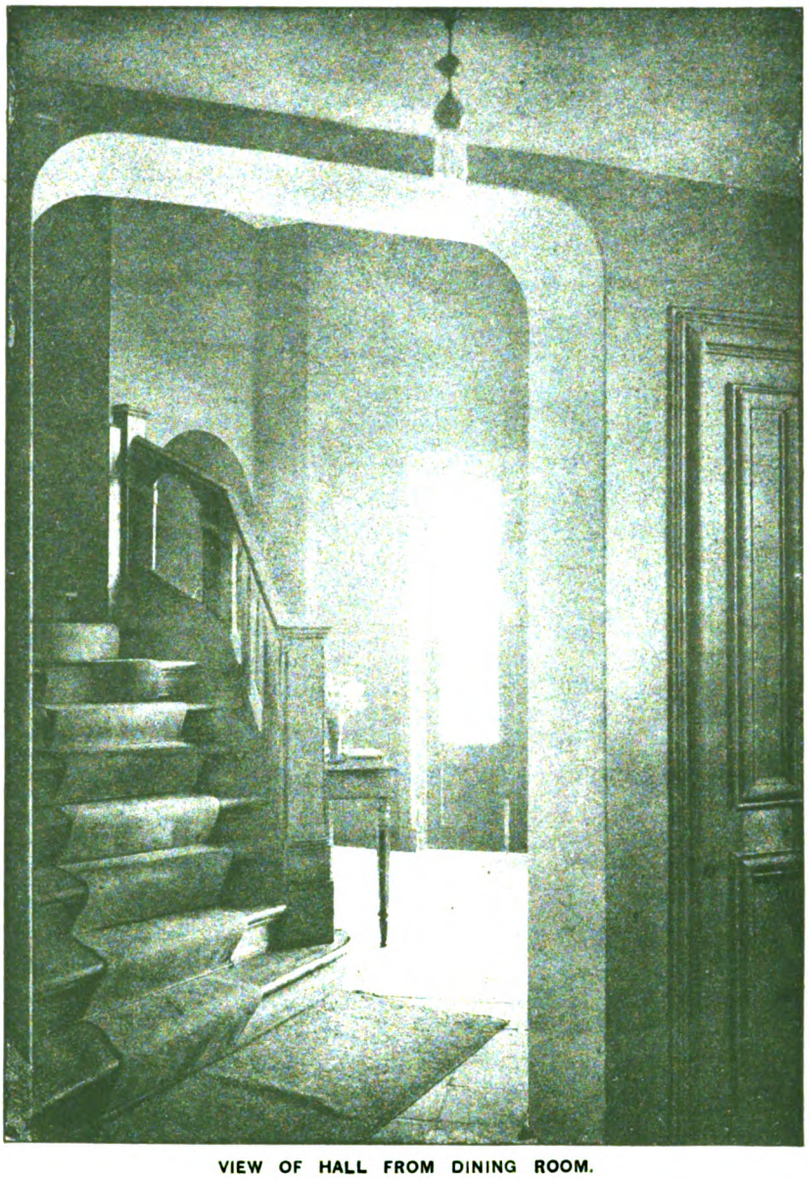
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"BALMADIES,"

Mr. M. M. OCHTE



RAWING ROOM.



VIEW OF HALL FROM DINING ROOM.



DINING ROOM

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COLINTON.

RLONY, Architect.

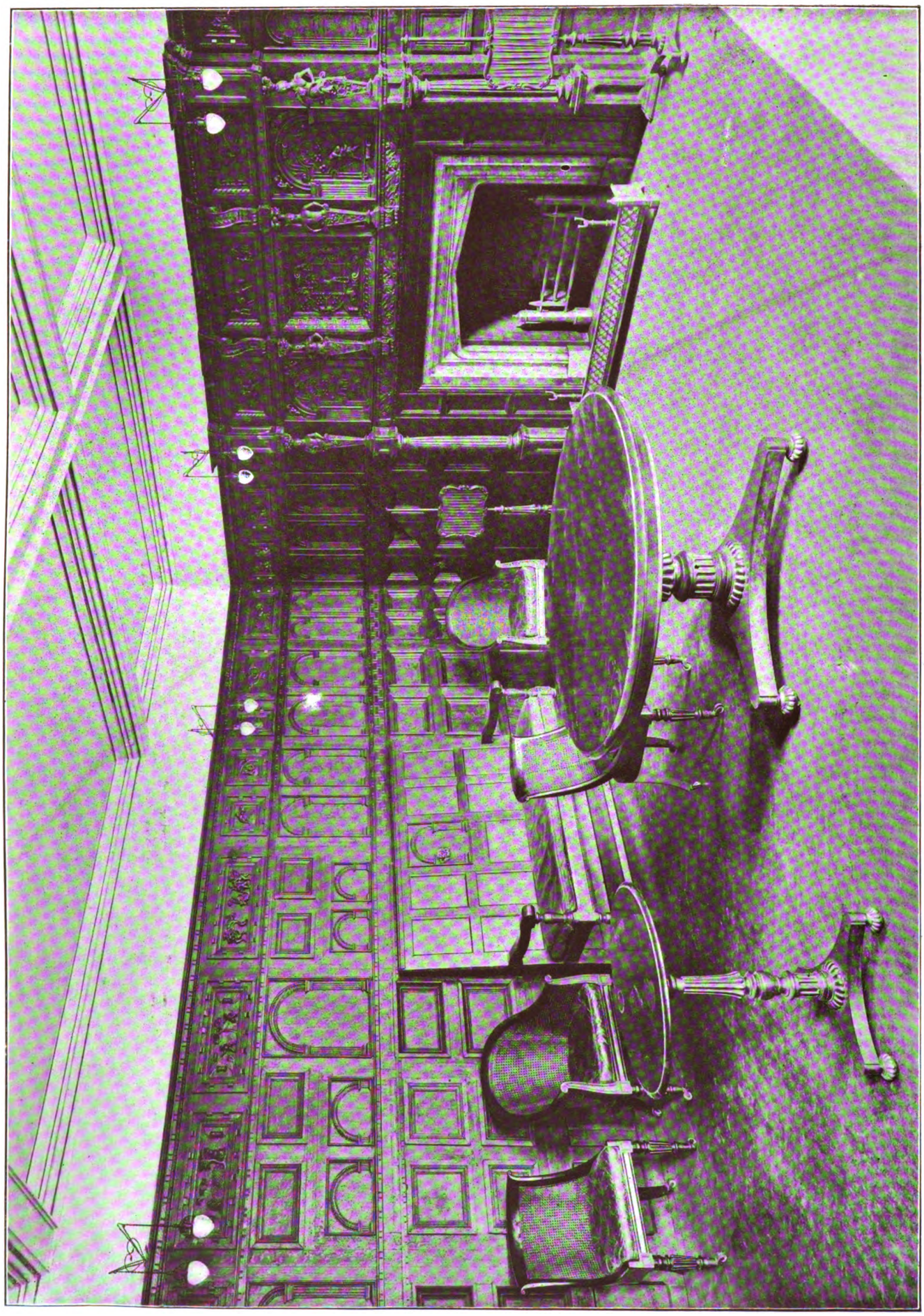
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OXFORD COLLEGE SERIES. No. 162.—UNIVERSITY COLLEGE: COMMON ROOM.

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OXFORD COLLEGE SERIES. No. 163.—UNIVERSITY COLLEGE: FIREPLACE IN COMMON ROOM.

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UNIVERSITY

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Where the canal begins a turn almost due north, stands a plain erection upon the great substructure of a huge palace, the Cà del Duca, commenced in the fifteenth century for Francesco Sforza, Duke of Milan. The work of construction was suspended by order of the Republic, and the only portion now to be seen is next the Rio del Duca adjoining.

After the Palazzo Malipiero comes the Campo San Samuele, with its picturesque little church of the same name, and then the Palazzo Sina (formerly Grassi), a great building with towers erected in the early eighteenth century by G. Massari.

Again, before the canal takes a sharp bend tc the right in a north-easterly direction, rises the Palazzo Pascolato, formerly Moro-Lin, a not very agreeable-looking monster late-Renaissance edifice, by Seb. Mazzoni, of Florence. Then the early-Renaissance Palazzo Contarini della Figure, by the Lombardi, and followed by the group of three contiguous palaces known as the Palazzi Mocenigo, late-Renaissance structures of no particular beauty, the centre one being chiefly famous as having been occupied by Lord Byron in 1818.

The Palazzo Garzoni close by is a nice Gothic edifice of no great pretensions. Passing the Rio Sant' Angelo the large early-Renaissance Palazzo Corner-Spinelli rises, a mansion by Moro Coducci in the style of the Lombardi.

At the corner of the Rio di San Luca stands the fifteenth century Gothic Palazzo Costanzo, formerly Cavalli, a very beautiful and ornate palace in the style of the Ducal Palace.

Then comes the chief work of the architect Sanmicheli, held by many to be the greatest among all the great works of this master, the Palazzo Grimani, an edifice almost universally admired and so unlike the Palazzo Corner della Cà Grande, in that from the water's edge to the top cornice it is the creation of the same hand. Said to have been erected after the master's death, in the sixteenth century, this beautiful pile occupies a prominent corner upon the famous water-way, and is now used as the Court of Appeal. This dignified edifice was spoken of in high terms by Ruskin, who was by no means fond of the Renaissance style; he, in referring to this design, declared that it contained not an erring line nor a mistaken proportion throughout its noble front.

It is interesting to compare the lower storey of this palace with that of Sansovino's: one is dignified, magnificent in treatment, and rich in detail; the other is imposing, heavy, and sombre. Sanmicheli's building is ninety feet wide and ninety-seven feet high, the Palazzo Corner della Cà Grande being 105 feet wide and practically the same height as the Grimani. The famous Veronese artist was particularly successful in this fine example of Renaissance architecture. Although perhaps his most celebrated work is the Capella Pellegrini in the church of San Barnardino, Verona—the city where so many of this master's works were carried out—many authorities still contend that the Palazzo Grimani is Sanmicheli's greatest achievement. Ruskin again says of this edifice, "the principal type of Venice, and one of the best in Europe of the central architecture of the Renaissance schools."

Quite a number of palaces are again passed by upon the journey up the canal, and among those worthy of particular mention are the Palazzo Farsetti, a Romanesque structure of the twelfth century, a noble edifice of great purity in style; and the Palazzo Loredan, contemporary with the Farsetti but much more magnificent, and, according to many critics, the most beautiful of all the mansions on the Grand Canal. The latter is a gorgeous example of the Byzantine-Romanesque period, and with that warm tinge of Oriental feeling so charming in this style and so foreign to so many of the examples of other periods. It is a fine palace and comes in for much deserved admiration.

Then, passing the pretty little and very ornate piece of early-Gothic work, the Palazzo Dandolo, supposed to have been built upon the site formerly occupied by the home of the great Doge Enrico Dandolo, who conquered Constantinople, the Palazzo Bembo, a handsome structure in the fourteenth-century Gothic style is seen, and is closely followed by the Palazzo Manin, a late-Renaissance edifice of the sixteenth century by Sansovino, belonging at one time to the last Doge Lod Manin, and at the present time used as the Banca d'Italia.

With the Ponte di Rialto, which is passed under to continue the journey up the canal, one reaches again that particular and crowded area, once the heart of "the city," the Rialto, the business centre and the nucleus of the great Venetian city in the days of her commercial prosperity.

Immediately north of the Ponte di Rialto stands the Fòndaco dei Tedéschi, now the General Post Office, but since the twelfth century a German warehouse. Destroyed by fire in 1505, it was rebuilt for the Republic by Girolamo Tedesco and Scarpagnino. After a couple of early palaces comes the Palazzo da Mosto, originally a twelfth-century Byzantine palace, so extensively



THE ISLAND OF SAN MICHELE, WITH THE CIMITERIO (CEMETERY), VENICE.

restored in the Gothic style that little remains of the early Byzantine structure, nevertheless a very interesting and unique morsel.

Passing by the next few buildings, the gondola now taking a turn in a south-westerly direction, one reaches the Palazzo Michiel dalle Colonne (now Donà dalle Rose), a large Gothic mansion rebuilt in the seventeenth century and of no particular interest.

Upon the wide sweep of the canal, and commanding a magnificent view of this ever busy way from the Ponte di Rialto to the junction of the Canal di Mestre, stands the pretty little Palazzo Foscari, which with several contiguous palaces occupies a post of honour. The Palazzo Sagredo, one of the group, is a fourteenth-century house in the Gothic style, with its lower stage denoting the transition between the Byzantine and Gothic. This is a very quaint and interesting example, and was no doubt at one time one of the best works in Venice. The irregular arrangement of the windows in

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the second and third stages is peculiar, but the great strength and beauty of the large window in the third stage is more like the upper arcade in the Doge's Palace than perhaps anything else in Venice.

The next in this striking group of mediæval palaces, possibly the most striking to be seen anywhere, is the Cà d'Oro, considered by many as the most beautiful palace in Venice. The fact that much of the elaborate decoration from which this sumptuous example of the later fourteenth-century Gothic derived its name has either perished or been destroyed renders it difficult to criticise this Cà d'Oro. Restorations have also been carried out to a considerable extent to this famous building; but with the several other houses of earlier date to which it unites, a group of much beauty is provided, adding to the water-scenery of this ancient city.

This elegant and ornate building is well known and deservedly much admired, and has an advantage not common with all architectural erections, that of taking the popular fancy. It is named from the original gilded ornamentation of the façade, which is inlaid with squares of white and red marbles, and there is much carving distributed over the surface, somewhat flat in treatment but effective, especially round and between the windows. The characteristics of the Venetian pointed period are noticeable in the carving of the capitals and moulding of the window-traceries, and the balconies are in places exceptionally fine. A peculiarity common to many Gothic mansions is the arcaded water-storey, with the traceried arcades above, all opening into recessed courts.

The peculiar impression that an additional wing has been added after the original design was completed gives a strange one-sided appearance to the design of this lovely old edifice, which was erected in 1421-36 for Piero Contarini by Giovanni Buon and Bartolomeo Buon, the architects of the western façade of the Ducal Palace, the style of which it follows. It has very beautiful and graceful traceried windows, which, together with its elaborate balconies and unique triple and splendidly carved angle-shafts, are features distinctly worthy of special notice.

The Palazzo Fontana is the next building of interest, built by Sansovino in the late-Renaissance style. It is said that Pope Clement XIII (Carlo Rezzonico) was born in this house. Just beyond the Rio di Noale is passed and then the Rio della Maddalena, and after passing several interesting and uninteresting buildings, the Palazzo Erizzo is seen, another Gothic design of the fifteenth century, after the style of the Doge's Palace, altered much in the interior in the early eighteenth century.

The huge Palazzo Vèndramin-Calergi occupies a prominent site close to the Rio dei Servi. Originally called the Palazzo Loredan, this truly gigantic edifice was completed in the early Renaissance style in 1509 from designs by Pietro Lombardo. This palace commonly called the Palazzo non Nobis, is one of the greatest and finest among the wonderful palaces of Venice. Cold but stately it is one of the more advanced examples of the Renaissance, with the tracery pertaining a Classic character. Richard Wagner resided here for some time and died within its noble walls in 1883.

Beyond on the last reach of the Grand Canal just before the final curve towards the north-west and the Ponte alla Stazione, rises the quaint unfinished brick front of the church of Santa Marcuola, erected by Massari in 1728-36. A picture by Titian and one by Tintoretto adorn the interior.

Passing the Cannaregio (the Canale di Mestre), a broad waterway compared with the very narrow side canals jutting off from the Grand Canal, down which the steamboats to Mestre go, upon a prominent corner site on the west of the entrance to which rises the church of San Geremia erected in 1753 with a fine campanile in the background, one comes to the last palazzo of note—the fine Palazzo Clery, formerly Flangini, a late-Renaissance seventeenth century edifice, much decorated and very possibly designed by Longhena. Close to the terminating point of the canal, from the architectural interest point of view, and adjoining the Stazione Ferroviaria, rises the church of Scalzi (Chiesa degli Scalzi), originally the church of the bare-footed friars, an edifice erected in 1649 by Bald. Longhena, with a façade termed by some writers "a picturesque façade in the baroque style," added by Gius. Sardi in 1683-89; but which the writer finds it impossible to admire. It might be called a sumptuously ugly façade, if such a term is admissible, the quality of ugliness being increased by the overloaded embellishments.

Having completed what can be described as little more than a rapid catalogue of the palazzi of the great Venetian families, covering the architectural periods from the Byzantine to the eighteenth century, and lining from end to end this most wonderful circuitous water highway in the world, providing examples of beautiful and quaint Byzantine, delicate and graceful Gothic, and noble dignified Renaissance styles, many of which would take several



THE CHURCH OF SAN GIORGIO MAGGIORE, VENICE.

pages to do even scant justice to their importance and grandeur, a return is made to the Molo.

Taking a walk along the Riva degli Schiavoni, previously mentioned, that broad quay flanking the Canale di San Marco, always presenting a lively appearance due to the continual arrival and leaving of the numerous lagoon steamers, a former fine palace, now the Hotel Danieli, is noticed occupying a magnificent position upon this noble promenade. Crossing the Ponte del Vin there stands in the centre of the next section of the quay a notable equestrian statue of Victor Emmanuel II., by Ferrari, and further on rises the church of Santa Maria della Pietà, of no particular note, visited principally because of the fine picture "Christ in the house of the Pharisee," by Moretto (1544). Close by the Schiavoni stands the church of San Giovanni in Bragora, of early date, extensively restored in the fifteenth century and again in the eighteenth century. There is a number of

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pictures by famous masters within this ancient edifice. Traversing the continuation of the quay, a view is obtained of the gateway of the Arsenal, which gateway was erected in 1460, and is considered the oldest pure early-Renaissance structure in Venice; the four famous lions at the entrance were, it is said, brought from the Piræus in 1687. The Arsenal, to which foreigners are not admitted, was originally founded in 1104, and employed in the prosperous days of the Republic some 16,000 workmen. Passing the church of San Biagio, and entering the wide Via Garibaldi, the beautiful Giardini Pubblici are reached. Laid out by Napoleon in 1807, this park of about twenty acres occupies the sites of a number of monasteries which were demolished.

The Isola di S. Pietro, situate within easy reach of the public gardens is worth visiting. Upon this island, separated from the main group of islands by the Canale di San Pietro, stands the church of San Pietro di Castello, a domed church of very ancient foundation. The original cathedral of Venice, from 1451 to 1807, this church is a noble edifice with a façade begun in 1596 after a design by Palladio. There is in front a fine and spacious campo; the campanile erected in 1474 and rebuilt, it is said, in 1482-90 by Moro Coducci, and still again in the seventeenth century, is particularly handsome, faced from top to bottom with white marble, and with its fine proportions and long vertical lines is one of the stately land-marks of Venice. The eastern part of the city, upon the main group of islands close by, contains perhaps some of the most squalid lanes and slum arteries it is possible to find in any part of the whole world.

Before taking a series of excursions upon the lagoons preparatory to leaving for home, there are just a few more buildings of special fame, to which rapid visits are paid.

Next to the public buildings already dealt with, the church of San Marco, and the Grand Canal and its palazzi, come the churches (other than those already named) of Venice. There are so many that it is impossible to mention more than a few of the most famous.

Perhaps the writer's favourite church (always omitting, of course, San Marco) after Santa Maria della Salute, is the church of San Giorgio Maggiore, by Andrea Palladio, that great master of Vicenza (1518-1580). He was the last of the great Renaissance architects of Venice. Palladio's churches were erected in Venice, but his palaces mostly in his native town. San Giorgio Maggiore is a domed cruciform church with apses terminating the transepts, and stands upon the Isola di San Giorgio Maggiore at the eastern extremity of Venice, almost due south of the Ducal Palace, and about a quarter of a mile distant therefrom. The situation of the edifice is perfect, and it forms, as it were, the southern post (with the campanile of San Marco as the northern) of the entrance portal to Venice.

On this island from a very early period was established a Benedictine monastery. The church of this monastery was demolished in the sixteenth century, so that Palladio might erect the present edifice, which was begun in 1560-65. The completion of this famous and picturesque pile took place after the time of Palladio. The interior is superior to the exterior in purity of style, and contains many works of great masters.

From the summit of the campanile, which is 195 feet high, a truly magnificent view of Venice is obtained, superior to that even obtained from the campanile di San Marco; the islands of the lagoons and of the Lido are included.

(To be continued.)

THE annual general meeting of the Surveyors' Institution, to receive the report of the Council and the announcement of the result of the election of officers for the ensuing year, will be held in the Lecture Hall, 12 Great George Street, S.W., on Monday, May 29, at five o'clock. The prizes awarded to successful candidates in connection with the recent preliminary and professional examinations will be presented by the President.

ARTERIAL ROADS IN GREATER LONDON.

AT the second main conference on Arterial Roads in Greater London, held at the Guildhall, Westminster, on Friday, May 19, the following report (summarising the conclusions of the six sectional conferences) was presented:—

SUMMARY OF PROCEEDINGS.

The first Main Conference was held at Caxton Hall, Westminster, on November 25, 1913, under the presidency of the Right Hon. John Burns, M.P., President of the Local Government Board.

Subsequently six Sectional Conferences were set up, North-east, North, North-West, South-West, South, South-East, which have met from time to time, reports of their proceedings having been published in May and September 1914, and in 1915.

As will be seen from these reports, the work of the Sectional Conferences, through their sub-committees, has been to collect information as to the views of Local Authorities and certain societies and associations concerning such matters as the sufficiency or insufficiency of existing roads for present and future traffic, the desirability or otherwise of the proposals of the London Traffic branch of the Board of Trade, the new routes and road improvements considered necessary, the utility of town planning as a means of fixing the desired routes, &c.

The information collected revealed a general consensus of opinion in favour of the principal road proposals of the London Traffic Branch of the Board of Trade. The view was also generally expressed that existing main roads were in hardly any case likely to prove adequate for future traffic requirements, and were in many instances of insufficient width for present needs. It was also the view of the majority of authorities that the by-law width was too narrow for main roads; and in many cases there was an emphatic expression of opinion that town-planning schemes would be likely to assist in the provision of better roads.

This information having been collected and tabulated, the next step was to grade the proposed roads so that the more important might receive first consideration.

The classificaion adopted was:—(1) Necessary roads; (2) very desirable roads; (3) suggested roads; and it was arranged that all those in the first class, and a few others, should be forthwith investigated on the ground, in consultation with representatives of the Local Authorities directly concerned.

For this purpose in all the Sections, except the North-Eastern, an Investigation Committee were appointed; in the North-Eastern Section the Sub-Committee undertook the investigation themselves.

The conclusions arrived at by the Sub-Committees as a result of these inspections were embodied in reports to the Sectional Conferences, and the findings of the last-mentioned bodies in regard to them are set out in full in the Report published at the end of 1915, and are summarised in this Report.

THE WAR.

In view of the war, the question was seriously considered as to whether the work of the Conferences should proceed. It was decided that the proper course was to carry on, chiefly in order that the details of important road improvements should be prepared, whereby in the event of work being required for large bodies of men, a most useful outlet for labour should be immediately available.

RECOMMENDED ROADS.

Several of the proposed roads would traverse more than one section, and therefore it will be convenient in these cases to co-ordinate the recommendations of the several sections, which harmonise most happily, and present a complete condensed summary in the case of each road.

North Circular Road.—The construction of this road is considered of very great importance, and is recom-

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mended by the three Sectional Conferences through whose districts it would pass, namely the N.E., N., and N.W.

At the eastern end it would start from the Green Man, Leyton, whence access to the east and south is available by existing roads to all parts of Ilford, East and West Ham, the Victoria and Albert Docks and Woolwich Ferry. From the point where it crosses the proposed Eastern Avenue the North Circular Road, in its way round London from east to west, would follow Whipp's Cross Road, cutting across a fairly open corner of Epping Forest to join Woodford New Road, thence to Beacontree Avenue, joining Wadham Road at Hale End, and following it in its junction with Billet Road. From here the line would lie through open country, north of Banbury Reservoir, across the River Lea by Locke's Wharf to the new bridge over the railway at Angel Road Station. From this point the route would follow Angel Road, Silver Street, Bowes Road, Wood House Road, Ballard's Lane, and Finchley Road, crossing to Bridge Lane and Brent Street and along Warner's Road, by the River Brent to the Edgware Road. The route would then follow the south side of the Brent Reservoir to Dog Lane Bridge over the Metropolitan Railway, across Harrow Road to Stonebridge Park Station, passing under the London and North-Western Railway main line, and over the canal to the lodge at Twyford Abbey, whence it would pass under the District Railway by the existing bridge at Park Royal Station, and join into and follow Hanger Lane to the south, over Ealing Common, and by Gunnersbury Lane, to its junction with Chiswick High Road at the spot where the Brentford By-pass commences. This proposed North Circular Road gives direct access at its south-western end to Kew Bridge and the far south-west of London, and by it Brentford, Ealing, and Acton are put in direct communication with Finchley and the main roads to the north, whereas at present no such direct connection is available.

South Circular Road.—The construction of this route is strongly supported by the South and South-Eastern Sectional Conferences.

From the bend in the Well Hall Road, Eltham, about 600 yards north of Well Hall Station, at its eastern end, access to Woolwich and the Ferry is readily available.

Leaving Well Hall Road at the point mentioned, the South Circular Road would cross open country by Eltham Green and Horn Park to St. Mildred's Road, which it would follow, continuing by Brownhill Road, past the back of the Lewisham Town Hall to Catford Bridge. Thence by Stanstead and Waldram Roads to Forest Hill Station, cutting across to London Road, thence past Lordship Lane Station to Dulwich Common, and on by Thurlow Park Road to Tulse Hill Station, where it would connect with Christchurch Road, and follow on by Streatham Place, Poynders Road, and Cavendish Road to Clapham Common.

From this point a road across Clapham Common to Battersea Rise leads west through Wandsworth and Putney, and access is available to Battersea Bridge viâ Clapham Common south side and Silverthorne Road.

It should be noted that both the North and South Circular Roads, for a considerable part of their lengths, follow existing roads, where improvement is simple, and by connecting up these lengths of road lines of intercommunication are afforded in parts where they are badly needed, in addition to the function of the circular roads as distributing routes by means of which traffic can avoid the crowded streets of the central area.

City Road to Hackney Road.—This proposed route to connect up the Eastern and Western Avenues viâ Pentonville, Euston, and Marylebone Roads is situated partly in the Northern and partly in the North-Eastern Section, and has the approval of both Conferences.

Proposed Road between Essex Road and Lea Bridge Road.

This road would also traverse both the North and North-Eastern Sections and the approved route is set out in the minutes of the Northern Sectional Conference. The object of the connection is to create a new artery to the north-east, viâ Lea Bridge, which, while other bridges are overcrowded, does not at present take its fair share of traffic, owing to want of more direct access.

The other principal approved routes, of which the details are set out in the respective Conference minutes, are as follows:—

N.E. Section.

Eastern Avenue.—A proposed new route of great importance designed to relieve the very congested Colchester Road and to provide a new artery.

This road would commence in the Hackney Road at Great Cambridge Street and terminate on the Colchester Road, beyond Romford. By means of the proposed road from Hackney Road to City Road it could be connected with the projected Western Avenue, by way of Pentonville, Euston, and Marylebone Roads, thus forming a direct and most necessary through route across London from East to West.

New Dock Road.—This is a road, proposed by the Port of London Authority and supported by the North-Eastern Conference, to relieve the present severe traffic congestion along the route to the Victoria and Albert Docks.

East Ham and Barking By-Pass.—This road would connect Beckton Road, East Ham, with Ripple Road, beyond Barking, which leads to Tilbury and Southend, and would greatly simplify road communication with the lower river docks.

A Road connecting Grove Road, South Woodford, to Beehive Lane, Ilford.—This road would form a useful route between Woodford and Ilford, and at the same time would provide a shorter connection between the proposed North Circular Road and Romford.

Barking Improvement.—This comprises a short cut in the town of Barking, from New Road into Ripple Road, to eliminate an awkward double bend in congested streets and so improve communication between Tilbury Docks and the City.

N. Section.

New Cambridge Road.—It is proposed to fix the line of this road through what is at present almost entirely open ground on the west side of the existing Cambridge Road, to act as a relief to it and to avoid passing through the narrow high streets of the old villages north of Tottenham. Its northern end would leave the existing road at Turnford, going south to the London County Council's White Hart Lane Estate, Tottenham, where it would branch off to Green Lanes on the one side and Tottenham High Road on the other.

N.W. Section.

Western Avenue.—This avenue is recommended as a new arterial road to the west which would relieve the Oxford Road and would incidentally open up for development a large area of land. It is proposed that its eastern end should start from Blenheim Crescent, Kensington, whence a connection is possible with the Eastern Avenue. It would cross into Silchester Road and then under the West London Railway, beyond which point the route lies principally across open land which here comes closer to the centre than on almost any other side of London. At its western end the new avenue would terminate in the Oxford Road about a mile beyond Uxbridge.

Sudbury Extension.—This comprises a much needed connection between Hanger Lane and the Harrow Road at Wembley, and in connection with the Western Avenue would afford a valuable alternative route from London to Harrow.

S.W. Section.

Extension of the Brentford By-Pass to the Basingstoke Road.—This proposal comprises the extension of the Brentford By-Pass (which the Middlesex County Council have arranged to construct), from the point where it ends

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in the Bath Road, to join the Basingstoke Road and so make it available for the Basingstoke Road traffic which exceeds in volume that which follows the Bath Road from the point of junction at Hounslow. This extension would also connect with a road leading south through Feltham to the river bridges, which it is proposed to improve.

Extension of the Brentford By-Pass to join the Cromwell Road.—The Conference are agreed that this is desirable, but the precise route is still under consideration.

Kingston By-Passes.—Two by-passes are recommended:—

(1) *The Outer By-Pass and Development Artery*, which would leave the main road at Kingston Vale and, skirting New Malden and Surbiton, would join the Portsmouth Road again at Littleworth Common Road. In the opinion of the South-Western Conference the line of this new road should be fixed now, whilst most of the land is open, to afford a through route clear of Kingston for future traffic, and to open up a great deal of land for development.

(2) *The Inner By-Pass and the connection to Copse Hill.*—This comprises a short cut in Kingston, by way of the Metropolitan Water Board's Pipe Line, which avoids the most congested portion of the high road. In the opinion of the Sectional Conference, this cut is required to relieve the immediate severe traffic difficulties.

The connection to Copse Hill is not proposed as an arterial road, but it is considered of great importance that the route, linking up Kingston and Wimbledon, should be fixed now, by means of town-planning schemes, while the land is still open.

Thames Bridges.—The Sectional Conference recommend:—

(1) The widening of Putney Bridge, for which a proposal has been before the London County Council;

(2) The rebuilding of Wandsworth Bridge and the improvement of its approaches; and

(3) The construction of a new bridge at Richmond, a short distance below the existing railway bridge.

Chertsey Road.—This road would form a new artery in between the Portsmouth and Basingstoke Roads, which are separated by four miles at eight miles from the City, and by eight miles at sixteen miles out. The new road would leave the High Road, Chiswick, at Chiswick Lane, and, following the course set out in the South-West Section Report, would terminate at Chertsey Bridge, and by connection with existing roads would shorten the routes to Woking, Bisley and Aldershot.

S. Section.

Sutton By-Pass and Merton Connection.—This proposal comprises a short length of new road from the corner of Morden Road, by Morden Hall, to the cross-roads at Rose Hill on the London Road. Just south of this point the Sutton By-Pass would commence, passing Sutton on the west side and joining the Brighton Road on Banstead Downs, thus relieving the High Street of Sutton, which is narrow and congested.

S.E. Section.

Bromley By-Pass.—This new road is designed to relieve the Tonbridge Road, where is passes through Bromley, and would leave the main road at Southend, passing on the west side of Bromley, and joining it again opposite St. Luke's Church on Bromley Common.

Eltham By-Pass.—This By-Pass is intended to relieve the Maidstone Road where it passes through Eltham, leaving the high road at Mottingham Lane and joining it again at the entrance lodge to Kemnal Manor, having passed south-west of Eltham.

Old Kent Road to Catford.—There is not much open land except at the southern end of this proposed route, but it is of very great importance. At present the Dover, Maidstone, and Tonbridge Roads all converge upon one point in New Cross, with the result that a section of the New Cross Road some 700 yards in length is practically the only outlet from London to the south-east. The new road is intended to relieve this congestion, and would leave the Old Kent Road by Coburg Road, ultimately joining the Tonbridge Road by the Berlin Road.

Town Planning.

Each Conference has expressed the desire that particular attention should be drawn to the urgency of at once fixing, by means of town-planning schemes or otherwise, the lines of certain approved routes where a great deal of open land is now available that will get quickly built up and the routes blocked unless they are so fixed.

The routes referred to are stated below, and a list is given of the Local Authorities through whose districts they pass, where open land is at present available, and therefore town-planning schemes feasible.

Those authorities who have received permission to prepare town-planning schemes for areas through which any portion of an approved route passes are marked A. Those authorities who have served notice of intention to apply are marked C.

As co-operation between adjoining Local Authorities is essential, the importance of the information conveyed by this list is evident.

North Circular Road.—Wanstead U.D., Leyton U.D., Walthamstow U.D. (A.), Chingford U.D., Edmonton U.D. (A.), Southgate U.D. (C.), Friern Barnet U.D., Finchley U.D. (A.), Hendon U.D. (C.), Willesden U.D., Wembley U.D., Greenford U.D., Hanwell U.D., Ealing B., Old Brentford U.D.

South Circular Road.—London County Council.

Eastern Avenue.—London County Council, Leyton U.D., Wanstead U.D., Ilford U.D., Romford R.D., Romford U.D.

East Ham and Barking By-Pass.—West Ham B., East Ham B., Barking Town U.D.

Road connecting Grove Road, South Woodford, to Beehive Lane, Ilford.—Woodford U.D., Ilford U.D.

New Cambridge Road.—Tottenham U.D., Edmonton U.D. (A.), Enfield U.D., Cheshunt U.D.

Western Avenue.—London County Council, Acton U.D., Hanwell U.D., Ealing B., Greenford U.D., Uxbridge R.D., Ruislip-Northwood U.D. (A.), Eton R.D.

Sudbury Extension.—Ealing B., Greenford U.D., Wembley U.D. (C.).

Extension of the Brentford By-Pass to the Basingstoke Road.—Heston and Isleworth U.D. (A.).

Kingston Outer By-Pass.—The Maldens and Coombe U.D., Surbiton U.D. (A.), Esher and The Dittons U.D. (A.).

Kingston Inner By-Pass and the connection to Copse Hill.—Esher and The Dittons U.D., Surbiton U.D., Kingston B., The Maldens and Coombe U.D., Wimbledon B.

Chertsey Road.—Chiswick U.D. (C.), Barnes U.D. (C.), Richmond B. (A.), Heston and Isleworth U.D. (A.), Twickenham U.D. (A.), Staines R.D., Sunbury-on-Thames U.D.

Sutton By-Pass and Merton connection.—Merton and Morden U.D. (A.), Carshalton U.D. (A.), Sutton U.D., Epsom R.D.

Bromley By-Pass.—London County Council, Bromley B., Beckenham U.D. (A.).

Eltham By-Pass.—London County Council, Foots Cray U.D.

New Roads Provided For.

It should be noted that the Middlesex County Council have made provision for constructing the Brentford By-Pass, the extension of which at each end is advocated by the South-Western Sectional Conference.

Also the County Borough of Croydon has undertaken to construct a by-pass to relieve the Brighton Road.

Plans.

Colonel Hellard has prepared plans of the routes approved by the Conferences to the $\frac{1}{2500}$ scale, which have been signed by the respective Chairmen, and which, it is suggested, should be kept as a record at the offices of the Local Government Board, where from time to time enlarged scale details might be added if necessary.

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Future Work.

Each Sectional Conference has reappointed its Sub-Committee, in most cases with the reference that they may consider the best means of carrying out the approved routes and keep in touch with, and encourage, co-operation between Local Authorities and between the other Sectional Conference with regard to road proposals and town-planning schemes, and that for this purpose they may elect a small Special Committee to form part of a Committee of the whole Conference.

Estimates.

Five out of the six Sectional Conferences resolved that preliminary estimates should be obtained as soon as possible of the probable cost of the respective improvements, so that, inter alia, in the event of unemployment, following the war, or otherwise, information as to useful outlets for labour will be readily available.

In four cases the resolution provided that the Local Government Board should be asked to obtain these preliminary estimates, on the ground that if the highest official body were to ask the Local Authorities, they would be glad to afford the Board all necessary information, whereas the Sub-Committees would not have sufficient status to enable them to collect the information.

One Conference alone took the view that the information could be collected by the Sub-Committees.

It is not suggested that more than preliminary estimates should be obtained at the moment, but it is felt that some general estimates are necessary if any of the road proposals are to be included in town-planning schemes, and if useful works are to be ready for the employment of large bodies of men at the end of the war, when considerable readjustment of the labour market will be inevitable.

The view has been frequently expressed at the Sectional Conferences that, the necessary routes having been selected and their lines fixed, the next proceeding should be to consider financial and other arrangements necessary to their execution.

In face of the enormous expenditure on the war, and the necessity that all the resources of the country should be directed to that channel, the question of finance is of particular importance just now, and it is of the greatest moment that advantage should be taken of the Town Planning Act, as far as possible, by co-operation with owners, to fix the lines of the proposed routes, without entailing extraordinary expenditure on works until the financial situation warrants it.

If the Local Government Board will arrange to obtain the preliminary estimates, the Sectional Conferences and the Special and Sub-Committees will be glad to use their best endeavours to facilitate the necessary co-operation between the Local Authorities.

Building Lines.

Four of the Sectional Conferences passed resolutions that they were of opinion that powers should be given to County Councils, after consultation with the Local Authorities concerned, to prescribe building lines to existing roads, subject to appeal to the Local Government Board. One out of the four Conferences restricted the reference to existing "main" roads, and another to existing roads "to the maintenance of which they (the County Councils) contribute, or to any other roads approved by the Arterial Road Conferences."

The resolutions do not exactly define the nature of the powers that are thought desirable, but the purpose of the recommendations, as disclosed by the discussions, is that the restrictions contained in the Public Health (Buildings in Streets) Act, 1888, as to bringing forward buildings in any street in urban districts, should be made generally applicable in rural areas, and that the County Councils are in a better position to take a comprehensive view of the requirements for a long length of road than are the smaller authorities through whose districts only short sections run.

The expression of opinion was confined to existing roads, as it was intended to apply particularly to land already built upon, to which the Town Planning Act does not generally apply. The general feeling in those Conferences which adopted the resolution was that where buildings fronting a narrow road were likely to alter in character and be rebuilt, it was desirable that a building line should be fixed, so that the Local Authority and the owners would have a settled policy in regard to widening, and new buildings would not be erected in a position which would entail their future demolition.

THE REGENERATION OF THE VILLAGE.

By Professor S. D. Adshead, M.A., F.R.I.B.A.

(Concluded from last week.)

Suggested Proposal to be placed before the Government.—In view of the need for thus making clear to Local Authorities what the Government are prepared to do, the following proposals have been framed by the Committee of the National Housing and Town Planning Council.

That the Government be urged to undertake that at the close of the war the Housing (No. 2) Act shall be re-enacted and capital up to a sum of £20,000,000 shall be placed at the service of Local Authorities or public utility societies for housing purposes (on the same terms as those fixed for the Housing No. 2 Act). If the Act has not lapsed (a point on which there is some doubt) then it will not be necessary to re-enact the provisions, but in any case it will be necessary to increase the amount.

The terms under which it was proposed that the £4,000,000 provided under this Act should be lent are given in the following extract from a memorandum published by the Council in December 1914:—

On Tuesday, November 24, 1914, Mr. Thomas Richardson, M.P. (at the request of the Committee of the National Housing and Town Planning Council), asked the following question of the Chancellor of the Exchequer in the House of Commons:—

Whether the terms on which loans will be granted to Local Authorities or approved societies under the Housing (No. 2) Act, 1914, have yet been determined; if so, what these terms are; and when will the Treasury be prepared to advance money to Local Authorities?

The reply of Mr. Lloyd George was as follows:—

In view of the exceptional conditions now prevailing in respect of rate of interest and cost of building the Treasury will be prepared to make advances for schemes approved by them on the recommendation of the Local Government Board or Board of Agriculture and Fisheries on the following terms:—

Local Authorities.*—Ten per cent. of the approved capital cost by way of free grant; the remaining 90 per cent. by way of loan with interest at 4½ per cent. per annum, to be repaid by equal annual instalments of interest and principal combined within the period usually authorised for the works of the nature of those for which the loan is required. On a sixty years' loan the authority will thus pay for each £100 of approved capital cost an annuity of £4 3*s.* 4*d.

Authorised Societies.*—Advances will be up to a maximum of nine-tenths of the total approved capital expenditure. Such advance will consist of (1) a free grant of 10 per cent., and (2) a loan of 80 per cent. of such expenditure; the loan to be repayable by annuity (interest and sinking fund combined). If the loan is advanced for sixty years the annuity would be at the rate of 5 per cent. per annum, that is to say, for each £100 advanced by the Treasury the society will pay an annuity not exceeding £4 8*s.* 10*d.

Where a scheme has been approved there need be no delay in making the advance; but it must be understood that the Treasury will only be prepared to approve schemes under the Housing (No. 2) Act in cases where unemployment in the building trade consequent on the war is exceptional and insistent and is not being provided for in other ways. These special terms have been arranged in view of the exceptional monetary conditions and the high cost of building materials now prevailing. As these

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conditions may change within a short time it must be clearly understood that the terms are subject to alteration from time to time without notice, and that whenever new terms are fixed these will apply to applications under consideration at the time the alteration is made as well as to future applications.

In view of the promise made by the President of the Local Government Board to the deputation sent by the National Housing and Town Planning Council on August 21, that the Government would advance money under the Housing (No. 2) Act at the same rate as that which they themselves have to pay, it will be of service to explain clearly and concisely what these new terms mean.

(1) The rate of interest for loans granted by the Public Works Loan Commissioners to Local Authorities before the outbreak of the war was 3½ per cent. The system of repayment usually adopted by English Local Authorities in regard to housing loans is the annuity system, and the annual repayment for a loan of £100 for 60 years at 3½ per cent. interest under this system is £4 0*s.* 2¼*d.*, this including interest at 3½ per cent., and sinking fund to repay the capital in the period of 60 years.

(2) According to the terms which the Treasury propose to give, the rate of interest on loans granted to Local Authorities will be 4¼ per cent. plus repayment charges on the annuity system—the loans to be granted for the usual periods of sixty years for building and eighty years for land. Against this, however, the Treasury propose "in view of the exceptional conditions now prevailing in respect of rate of interest and cost of building," to make a free grant of 10 per cent. to Local Authorities, for schemes approved by them under the new Act. For every £100 advanced by them they will therefore only require interest and sinking fund charges to be paid on £90, and as £4 3*s.* 4*d.* is the annual payment to be made for a loan of £90 for sixty years at 4¼ per cent. with interest and sinking fund charges added on the annuity system, Local Authorities will only be called to pay £4 3*s.* 4*d.* for each £100 advanced to them—viz., 3*s.* 1¾*d.* per £100 more each year than in the case of a loan of £100 at the rate of interest current before the war.

If the sum now suggested, viz. £20,000,000, is set aside for housing purposes it should be available on the terms of the Act until all the money is applied for. Local Authorities will only be discouraged if they are led to think on applying for a loan that the rate of interest may be suddenly raised and all their calculations upset. There should be a provision in lending this money that in case the rate of interest falls after a number of years, Local Authorities should be able to pay off the old loan and re-borrow at the lower rate.

It may be objected that the Government in lending on the same terms as those of the Housing (No. 2) Act will be lending to Local Authorities at a loss. But if unemployment does not arise, and if there is a full demand for the labour of men in the building trade the Government need not lend this money and incur this loss.

Legislation.—Such a reformation as has been outlined could only be brought about by new and improved legislation. The first step to be taken would be to pass a National Road Act, and the Small Holdings Act might be swept into a much more important Act, which might be described as "The Village Planning and Land Cultivation Act."

Before considering the subject of the more important clauses of such Acts, it would be well briefly to refer to defects in the Housing and Town Planning Act and in the Small Holdings Act in the light of experience gained in their working.

One of the great drawbacks of the Town Planning Act seems to be that whilst it deals with interests that are both local and national, it does not discriminate between the responsibilities of the State and those of the Local Authority. The Town Planning Act, whilst intended to provide for the better development of building operations over undeveloped land, necessarily touches interests that are more national than local, and contains no satisfactory provisions for dealing with them. The Town Planning Act should have been preceded by a National Road Act. Under existing legislation, therefore, we are designing the limbs without any reference to the organisation as a whole. The Small Holdings Act and other Acts which have emanated from the Board of Agriculture deal with the interests of agriculturists in regard to small areas of land and isolated cottages, but make no provision for their inter-relation and for the interests of agriculturists as members of a community.

What is really wanted before the necessary legal machinery can be set up is a closer co-ordination between the Local Government Board, the Board of Agriculture, and the Road Board. Otherwise town plans will continue to be prepared without proper reference to a main road system, agricultural land will be acquired without proper reference to transport facilities, and main roads will be constructed and improved without proper consideration being given to their ultimate use.

The Town Planning Act should be revised to work in with a new National Road Act which should provide both for the design, finance and execution of all main roads, and the powers of the County Councils in the matter of road control should be confined to the making and upkeep of secondary roads. The County Councils should be made the authority responsible for the carrying out of the proposed new "Village Planning and Land Cultivation Act," which should be a revised and enlarged edition of the Small Holdings Act. It should empower them to acquire and decide the use to be made of any agricultural land within their area, including villages of not more than 2,000 inhabitants. It should contain powers both for deciding upon the direction and width of all secondary roads and, where there was a reasonable prospect of their being economically advantageous, empowered to provide the finances for constructing same. It should provide powers for the establishment of co-operative societies whose objects shall be the promotion of organised systems of agricultural development and the rejuvenation of the village. Powers should also be held for providing credit facilities to such societies, transport facilities, and facilities for the acquirement of expensive machinery and plant. In the matter of village planning it would naturally run across the powers held by the Rural District Councils under the Housing and Town Planning Act. The new co-operative systems which would be set up would provide the local interest, and here I think the Rural District Councils should have the powers they hold under the Housing and Town Planning Act transferred to the County Councils, who would incorporate them in the new Act.

The Suggested Legislation in Operation.—Progression would need to proceed gradually and by experimental stages. Land easily accessible would be the first to be acquired, and at the outset tenants of small holdings and labourers might even live in the nearest existing towns.

The motor waggons that will be available in enormous numbers after the war could be used to establish transport lines for the carriage both of goods and workmen between towns and railways and the new farms. Initial success would justify the advancement of credit for the construction of new roads, the acquirement of more inaccessible areas, and the gradual erection of villages and the building up of village life; undoubtedly the ultimate object to be attained.

Let us then describe such a new community, erected after the experimental stage had passed. Let us suppose it to be five miles from the nearest railway station, and two miles from the nearest main road to which it is connected by a newly constructed sixteen foot asphalte track. The ground chosen is suitable for mixed farming, an old farm which for lack of capital and enterprise has become a bankrupt concern. Let us suppose that some 4,000 acres had been reasonably acquired, that the site was so situated in regard to its connection with the nearest railway station and in regard to existing local features and transport conditions, as to promise to become a most suitable one for a village and transport

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centre. Let us suppose that connections have been planned in advance with other areas to be acquired later within a radius of (say) three miles.

The new village is planned either as an entirely new development or as an extension of an existing village, for an existing village might already occupy a favourable position in connection with the area that was acquired. The 4,000 acres is mapped out roughly into 50 to 100 acre farm lots, and a certain number would again be divided into five-acre plots for intensive culture. The sort of farm that would be most popular would probably be the mixed farm, though a certain number of prospective tenants would concentrate on fruit and vegetables. In any case, the size of the average holding would be such that it could be entirely worked by two men with the assistance of extra labour during harvest and at odd times. In the mixed farms there might be kept three or four cows, one or two horses, pigs, and poultry. Farm buildings and a cottage would stand on each farm, grouped around a farmyard very much as at present, and the village would, in its principal features, be very much what we see to-day. There would be a church and a chapel, a public house, a general store, a butcher's shop, a smithy, and a post-office. Where, then, would come in the difference that would mark progression? The difference would be seen in the result of a co-operative system that, interwoven in the social fabric of the community, had created an independence of spirit, creative ability, an interest in life, and a capacity for overcoming difficulties of organisation previously unknown.

A branch of a national agricultural banking system, with a manager acquainted with everyone within a radius of three miles, would undertake the advancement of credit and the finance of local co-operative societies that would be officially set up. These would control all transport facilities, both for passengers and produce, including building materials and manures. In addition to cottages for men with families, there would be settlements for the unmarried. There would be co-operative creameries and butter factories, packing sheds, and depots for the loan of expensive implements, such as reapers, that are only occasionally used. All the farm buildings and the cottages would be designed so as to incorporate in their construction standard details; doors, windows, staircases, gates, railings, &c. which after the most careful consideration would be manufactured in thousands in accordance with approved designs. This would not mean standardisation, with a repetition of the monotony that prevailed during the industrial revolution of last century, for there would be individual interests in the composition. The material of which the solid walls would be constructed would depend upon the possibilities of the district. Where there was plenty of gravel the construction would be of concrete. In a brick district it might be cheapest to build in brick or with a combination of brick and concrete, reinforced, and in many cases buildings might be framed in steel and roofed with asbestone, permanite roofing, or wood. The durability of all buildings depends very largely upon the nature of the foundation. Small buildings, constructed of almost any material, will prove satisfactory provided they stand on a good concrete slab. The by-laws with regard to the construction of habitable dwellings in rural districts which have never been properly divorced from the by-laws controlling the erection of dwellings in towns will need to be remodelled and recast; and, whilst the superficial area of habitable rooms should not be reduced, there should be relaxation as regards ceiling heights. And where cottages are detached or semi-detached, by-laws which have been framed with a view to the prevention of fire, and which are the cause of great additional expense, will need to be repealed.

Whilst the cottage of the small farmer will still be grouped with his farm building, the labourer and small holder will live in the village. There will be no allotments, for every cottage will have a garden of from half to three acres in extent. With regard to the plan and arrangement of the cottage I think it will have a small front parlour, a kitchen, and three bedrooms. An alternative arrangement would be to have a large living room, kitchen, and a scullery on the ground floor and no parlour, but I think the parlour and kitchen arrangement better. The occupants will be mostly young unmarried people who will not care for everyone to intrude upon their domesticity. There will be a sink in one corner of the living room and a ventilated food store. The scullery is a cold place to wash in during winter, and needs a good deal of keeping clean. Outside there will be a washhouse with a boiler and tool shed under one roof. But the great feature of the cottage will be the kitchen, which will measure at least 22 feet by 15. It will have its comfortable end round the fireplace, and its service end near the door. I think a bath will have to be provided, perhaps of the tip-up pattern, and it can be placed in a recess or under the stairs. As has been mentioned, the doors, windows, stairs, fireplaces, &c., would be to standard designs. On clay soils the floors would be concrete, covered with linoleum, and on sandy or gravel soils the concrete would be omitted, and the floors would, perhaps, be of wood. If the bricks are good, as in the North of England, a 4½-inch brick or a 3-inch concrete outside wall would be perfectly satisfactory, always provided that there were an inner lining to prevent damp from penetrating and condensation from appearing on the wall. In my view the inner lining will be constructed of coke breeze concrete slabs, about one inch in thickness, leaving an air space of half an inch, and stuck to the outside wall with bits of slate and cement. Such slabs manufactured in immense quantities and used in such a way would make cottage-building 25 per cent. cheaper. The three upper rooms would be partly in the roof, and flat dormers would be bought ready made from stock.

At the entrance to the village would be the village green, and the most conspicuous building to be seen from it would be the village public house. This building would not be the resort of wastrels, as it has so often been in the past; on the other hand, it would be the social centre of the village. With the drastic measures that have come into force since the war, is it not reasonable to assume that the public could be habituated to stringent restrictions as regards the sale of intoxicants, and that the publican could be converted from relying upon his present narrow circle of convivial patronage to dependence upon a much wider sphere by providing the opportunities for social intercourse and recreation for both sexes and all classes? As seen from outside, a conspicuous feature would be a verandah where refreshments would be served out of doors. A door from the verandah would lead into the bar, a second entrance would lead into a small hall. This, which would adjoin the bar, would be separated from it by an archway very much as the refreshment room of a theatre is now. At the other end of the hall would be a platform, and here would be held all sorts of alfresco entertainments, including cinema shows. The hall would be furnished with tables and chairs, and here the villagers, whilst consuming tea and coffee, temperance drinks and light beers, could amuse themselves watching the entertainments. The public house would also contain a private room and accommodation for three or four travellers who might have business in the neighbourhood. There would also be a tea garden, a skittle alley, and grounds for quoits and bowls.

Another institution would be the co-operative store, and, in addition, there would be bakers and butchers, perhaps two of each, for there must always be fair competition. Thus a store and a few shops for perishable goods would be arranged around a market square, together with a co-operative institution as a depôt for the supply of agricultural implements, a garage, a creamery, a butter factory, and a packing shed. There would also be accommodation for one or two home industries, such as furniture making, basket making, and fence construction. These, with a bank and insurance office, would

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close in the village square. The square itself would be paved, and here could be held open markets on certain days.

But we have not yet mentioned the village hall, where public meetings and the more sedate entertainments of the village would be held. The square might be surrounded with a double line of trees beneath which might be seats where business could be discussed. And just as the village green would be the recreative centre, so this would be the scene of its business transactions. The school, a church, and a chapel would be situated on the village green.

As opposed to urban methods, except in the vicinity of the market square, there would be no side pavements other than a few flagged ways where the villagers constantly walked. The roads, which would be well-constructed and asphalted, would be bordered with wide grass tracks. Many of the old hedges and possibly a goodly number of old trees would have to be removed to make room for light fencing in the fields. Trees would be planted in selected positions to provide shade for the cattle, also around the farm buildings, about the village, and bordering some of the country lanes.

Here then is a picture of the model village of the new community. But whilst there may be certain areas where it would be advisable to create everything de novo, in most cases it will be found that the problem is not the creation of a new village, but the improvement and rejuvenation of an existing one. Many of our old villages are in appearance and in regard to natural amenities all that could be desired; they merely require restoring, whitewashing, and resuscitating as regards their social life. Many of them have been spoiled by features that, introduced without adaptation from the towns, clash horribly with rural life. The village, its planning, its buildings, and its inhabitants must have a rural character quite different from that which is suitable to the town.

With the introduction of co-operative systems and their buildings adapted to the conditions of old sites, and a certain amount of restoration and the careful preservation of existing features of interest, no doubt many villages could be brought back to life without being unutterably spoiled. The brewers, temperance drink manufacturers, and film producers might combine in the reformation of the village public house, and so convert it into the popular village resort which has been described. And if reformatory measures are too difficult, and the conditions too stubborn, for the surgical operation of cutting out and carving, then the scheme should be to create an up-to-date extension of the village at a chosen point.

AIR-CRAFT INSURANCE.

THE Council of the Surveyors' Institution desire to remind members of the need for precision in defining the property which it is desired to insure, and the risks which are to be covered, in connection with the Government Insurance Scheme.

In the majority of cases, aircraft insurances have been effected through the agency of the insurance companies in whose offices the property concerned is insured against fire, and the description of the property and of the risks insured against contained in the fire policy have been followed. The terms of a Government scheme are necessarily the subject of a stricter interpretation and a closer audit than is always enforced by an ordinary insurance company competing against others for the favour of the public, and the War Risks Insurance Committee have decided that they cannot accept liability for the payment of professional fees in respect of services in connection with reinstatement unless specially insured by a separate item, nor for the cost of reinstating boundary walls, fences, paving, &c., unless definitely included in the policy. When existing fire policies have been followed, this can be done by an endorsement slip attached to the policy, and members desirous of including other matters within the insurance are recommended to take that course.

THE LATE MR. EDWARD ARTHUR HEFFER.

MR. EDWARD ARTHUR HEFFER was born in London on May 5, 1836. He was the son of Edward Heffer, picture dealer and gilder, well known amongst artists. After receiving a private education, the object of this notice entered the Government Head School of Design at Somerset House when he was 14 years of age, and studied there under Mr. Richard Burchett and the visiting masters, J. R. Herbert, R.A., and Richard Redgrave, R.A. He remained there two years, and was awarded in 1852 the National Medal for linear perspective, the only one awarded in the United Kingdom, also he took the first prize for chalk drawing, and for practical geometry.

Mr. Heffer's impressions of his time at Somerset House are given in a short article by him which appeared in "The Architect," of March 8, 1907.

After spending some months in sketching from nature in the neighbourhood of Hampstead, he was introduced by John Wykeham Archer, F.S.A., and George Lance, the eminent still-life painter, to John Thomas, sculptor of the New Palace, Westminster, and architect of Somerleyton Hall, Suffolk, for the late Sir Samuel Morton Peto, M.P.; Preston Hall, Aylesford, Kent, for E. L. Betts, Esq., and numerous other buildings.

Although Mr. Heffer first worked at modelling and carving, he afterwards helped Mr. Thomas with his architectural work, in which he felt he would better succeed, as he had a strong feeling for the art of the architect.

After being with Mr. Thomas for four years, at the age of twenty-one he went to Liverpool, where he began practice as an architect and designer of ornamental and decorative work. He soon obtained a busy practice, and designed the National School and Public Offices at Wavertree, a school at Walton-on-the-Hill, a warehouse in South Castle Street, Liverpool, for Mr. Ashe, the Mayer Lecture Hall and Art Gallery, and the Free Library at Bebington, Cheshire, and Pennant House, at Bebington, for the late Joseph Mayer, F.S.A., and various residences in the neighbourhood of Liverpool.

His chief work, however, which occupied four years, was the church of St. Bridget at Wavertree, on which he bestowed much care. In plan, the church is somewhat similar to the church of St. Agnes in Rome, but the details are of a carefully-studied Greek character. The exterior is of grey brick with bands of red and black bricks, and there is a tall campanile. The narthex entrance has a wide semi-circular opening, and above it a bust of Our Saviour; alto-relievos of the four Evangelists are also let into the walls. In the interior, the nave arcade has eighteen columns of polished Kilkenny marble, with bases of black marble, and capitals carved in white Yorkshire stone.

Mr. Heffer prepared designs for the furniture of the church, and the twenty-one large windows of the clerestory are filled with coloured glass, prepared from Mr. Heffer's own drawings, and representing the Redeemer, the Apostles and Prophets. The carving of the altar, made of various woods to his design, is also from full-size drawings.

The church was fully illustrated from wood engravings drawn by the architect, and published in "The Builder," in July, 1871.

Mr. Heffer returned to London in 1875, and carried out works at Hampstead and Kilburn. The Red Tower, Messrs. Phillips & Page's Music Warehouse, Mr. Stuart's shop in the High Road, the Queen's Park Hall, Kilburn, various shops and villas in West End Lane, and the Emmanuel Boys' School at West End Green were designed by him.

In 1875 Mr. Heffer made a design for a cathedral to be built on the site of St. Peter's Church, Liverpool, and read a paper on the subject before the Historic Society of Liverpool. When, after some years, the competition was organised, he submitted a design for the cathedral on St. James's Mount, and made a model of it, which was exhibited at the Walker Art Gallery, Liverpool, and much

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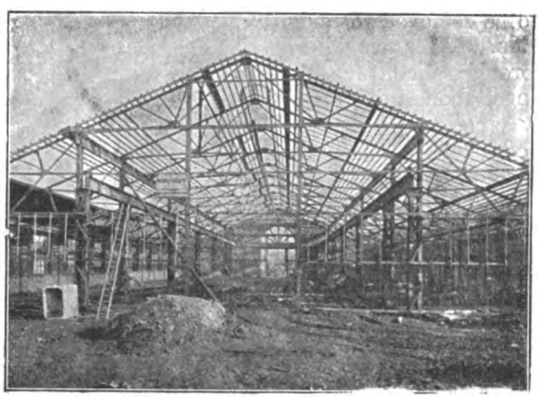
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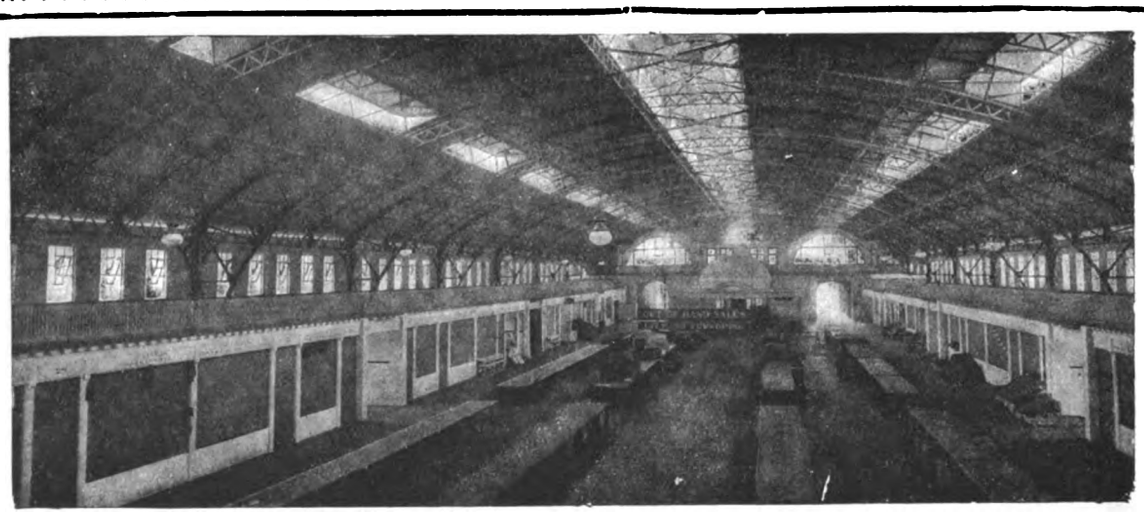
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approved. The cathedral site being limited from east to west, but extending considerably from north to south, and Mr. Heffer, deeming it an essential point to retain orientation, he decided upon placing the altar in the usual English manner at the east end, facing the Cemetery. Ample space for the stalls was to be found without encroaching upon the great octagon at the crossing. The nave extending north and south would have been 400 feet long, and with its double aisles on each side would have provided abundant accommodation and an imposing interior effect. The construction of the roof and lantern were carefully designed to counteract side-thrust. the style adopted was that of the fourteenth century, and the design provided many niches for statues on the exterior.

In 1892 Mr. Heffer removed to Norwich, and carried out several hotels for Messrs. Bullard, and other works.

Mr. Heffer's practice was somewhat limited, as he was accustomed to do all the necessary detail drawings for his work himself. He found time, however, to enter over seventy competitions, and gained several premiums.

Among others, he gained the premium offered for a design for the Albert Memorial Clock Tower at Hastings, and was entrusted with the work of building it. He also obtained the premium of 100 guineas for his design for the improvement of the White Rock Parade at Hastings, and fifty guineas for his design for the Town Hall. In Hastings, too, he built Tudor House for the late Alderman Ross.

At the age of nineteen he exhibited at the Royal Academy, the work being a design for a Bishop's tomb, and again in subsequent years his work was to be found there. Illustrations of his buildings have appeared both in "The Builder" and "The Architect." Those in the former paper were drawn on wood by Mr. Heffer himself.

Apart from architecture, he designed domestic and church furniture, plate, clocks, and many other things incidental to his profession. Like most architects, too, he was fond of music, an able performer, and also occasionally a composer. He painted too in water colour, doing many works both in landscape and figure. He also painted in oils.

THIRD SURVEYORS AND AWARD UNDER LONDON BUILDING ACT.

A DECISION, which was stated to be of the greatest importance to surveyors, was given by his Honour Judge Cluer in the Shoreditch County Court on Thursday. The plaintiff was David Morris, of 98 Darenth Road, Stamford Hill, a builder, and he asked that an award that had been signed by Mr. Adams, a surveyor, under the London Building Act, should be set aside, the respondents being Messrs. Clozenberg & Hopkins, Ltd., of 36 Charing Cross Road, W.C., picture-palace proprietors. Mr. H. J. Turrell appeared as counsel for the plaintiff, and Mr. Lincoln Reed, barrister, for the defence. The ground for asking for the award to be set aside was that it was signed by Mr. Adams only, and not by one surveyor appointed by either the appellant or the respondent, or by three or two surveyors, as required by Section 91 London Building Act. It appeared that the appellant was the owner of some building land adjoining the respondents' picture-palace. Appellant was preparing to build six lock-up shops, and Mr. Pratt, surveyor to appellant, prepared a party structure notice. Mr. Beard was the surveyor to the respondents. When building operations were started another wall was discovered, so that it could be said there were two party walls, but really they were externals. A third surveyor was appointed as required by the Act, Mr. Adams. Then the matter found its way to the Chancery Court, and it was agreed that there should be no interference with walls "D, E, and G," but no mention was made of "C, D." Then a reference was made to Adams, and on April 10 he published an award, which he alone signed, which counsel contended was not one contemplated by the Act, it not being within the province of surveyors to publish such an award. He took upon himself to call "C, D," a party wall, but he had no jurisdiction as to it, as it was not included in the party wall notice. He was really only asked to find when it would be convenient to start work. His Honour would know that an award had to be appealed against within fourteen days, or it would become conclusive. Then as to the award there was a technical point of the greatest importance to surveyors, and that was that these references to surveyors under the London Building Act were as arbitrators and not as umpires. If there was only one surveyor of course he could decide, but if each side had one and they appointed a third in accordance with the Act, then the award had to be signed by a majority of two, if not the whole three, to be valid.

Mr. Reed said he could not agree with the point. The language in the statute was directory and not imperative, and therefore the fact that the award was only signed by Adams did not vitiate it. He was informed that it was the universal custom amongst surveyors to appoint a third, who signed the award solus. It was a practice that had steadily grown up and was always acted upon. If his Honour looked at the matter with technical eyes he felt sure he would see there had been sufficient compliance with the Act. The Legislature surely meant that disputes were to be referred to a third surveyor, and after all an award could get no further virtue if it were signed by two or three surveyors.

Judge Cluer said if it was going to be suggested that a third was to be appointed who could issue a solus report, it was in direct contradiction to the idea of appointing a second and a third. Anyway, the first point was fatal. Mr. Adams had mistaken his position; he had taken the position of umpire, which was wrong, and he must set aside the award. If it was the practice amongst surveyors for the third to issue solus awards, then the sooner the practice was altered the better for them, as it was illegal.

Mr. Turrell asked as to the £10 10*s*. that had been paid for the award, and his Honour said they would have to sue for that; he had no power over it.

The appeal was then allowed, with costs.

ART IN LONDON.

BRITISH HERALDIC ART AT THE BURLINGTON FINE ARTS CLUB.

THIS collection of heraldic industry, which the Burlington Fine Arts Club has so diligently brought together within the walls of No. 17 Savile Row, is one which is unique in character and interest. It is not an exhibition which can be judged in the manner suitable for the customary art displays. The usual words and phrases employed by the critic are here out of place; the exhibits are not amenable to the laws of Nature's models, chiaroscuro, perspective, personal equation, and so on. Conventional treatment, conventional colour, conventional drawing—these are the chief characteristics of heraldic art.

The interest of such an exhibition appeals, in the main, to the antiquarian and the librarian, and perhaps also to those with a long-connected pedigree of their own, thus creating for them a feeling of sympathy. Humorists worked their will unchecked in the palmy days of heraldry, elaborating broad jests in the way of mottoes, rebuses, and other trifles, which we can scarcely term ephemerides, seeing how they have survived even to this day.

We notice this as soon as we start inspecting the exhibits. No. 2 (West Wall) is an engraving known as "Talbot's Rose," being a design in the shape of a rose by Thomas Talbot in the year 1589, displaying on the petals the arms of those who had been gartered from 1485 up to date. Amongst these we observe the arms of Sir R. Wingfield, displaying on a field argent three couple wings erect. And so with Trivet, and so with Delves, and so with many others. In No. 36 (West Wall) may be seen upon a portrait of Sir Humphrey

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Wingfield (temp. 1587) a large shield of the arms and quarterings of Wingfield. But though we have eliminated from consideration the usual resources of art-critics, this it is permissible to note: that both as regards draughtsmanship and colour, great differences in point of merit are observable as our glance passes from one to another roll of arms and illuminated pedigree. The engrossing is, as a rule, of a high order of excellence.

The collection of heraldic paving-tiles is very interesting, and to a large extent decorative. An attractive exhibit is a stone shield (removed from the roof of the Guildhall in 1864) displaying the arms of Edward III. in high relief. But perhaps the finest items of architectural interest are (1) a carved-oak panel (over the fireplace) showing the arms of the house of Tresham with twenty-four quarterings; and (2) a cast-iron fire-back ornamented with the arms of Henry VII.

A very quaint irreligiously religious exhibit is a panel of tapestry (over the fireplace) representing the Trinity. We refer those interested to the description in the catalogue, and, of course, to the original exhibit. This is assumed to be English work (temp. circa 1400). That "the best authorities on the Continent all decline to admit that it belongs to France, Germany, Flanders, or Switzerland" is perhaps not satisfactory evidence as to its British origin, seeing that it is nothing to boast about from the standpoint of merit. The two stoles and the maniple on the East Wall are beautifully embroidered works of art, ornamented with shields of arms.

The gilt brass sun-dial made for Cardinal Wolsey may seek the shade during the coming summer months, when we shall be forbidden by legislation to take our time from the sun.

There is some excellent armorial book-binding, and, amongst other exhibits, a gilt pinchbeck watch-case (No. 16 in Case J) deserves mention for its delicate workmanship and artistic design. Some painted glass did not prove specially attractive, but we wish to make it clear that the exhibition is one that cannot fail to arrest the attention of an intelligent public, though appealing to the sympathies of a limited section of it, and it deserves far more time for inspection than one brief afternoon visit affords.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Lumsden Case.—Concession by the Chancellor of the Exchequer.

SIR,—May I, through your courtesy, call attention to an important concession now made by the Chancellor of the Exchequer in cases where increment value duty is being claimed under the Lumsden Judgment?

The concession is set out in the following letter, which I am permitted to publish:—

"I have again given the most careful consideration to the question of the collection of duty in cases affected by the Lumsden Judgment, and I think that the best course will be to leave matters as they are at the present time until Parliament has decided how far the promised legislation is to be made retrospective. The Board of Inland Revenue will therefore allow payment of increment value duty to remain in suspense in cases which would be covered by the legislation promised by the Prime Minister, whether such duty became payable on an occasion arising before or after May 7, 1913." (Signed) R. McKenna.—I am, Sir, yours, &c.,

C. H. KENDERDINE,
Secretary.

The Land Union, St. Stephen's House, Westminster, London, S.W.: May 20, 1916.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

DERBYSHIRE.

Bonsall.—Mills: extension for Messrs. Hollins & Co.

HAMPSHIRE.

Farnborough Green.—The "George" p.h.: additions and alterations for Messrs. Watney, Combe & Reid, Ltd.

KENT.

Chatham.—House, Wyles Street, for Mr. J. Hawes.

Walmer.—Two cottages, near Wellington Farm. Mr. T. T. Denne, builder.

LANCASHIRE.

Manchester.—The "Tramway" Inn, Great Jackson Street, Hulme: alterations.

Rochdale.—Buckley Mills: additions for Messrs. J. Schofield & Sons.

Works, Fishwick Street: additions for Messrs. T. Robinson & Sons.

Works, Spotland: additions for Messrs. C. Whitaker, Ltd.

LINCOLNSHIRE.

Grimsby.—Factory, Sheepfold Street: extension for Messrs. T. G. Tickler, Ltd.

NOTTINGHAMSHIRE.

Bagthorpe.—Isolation Hospital: additional wards (£4,500) for Nottingham City Council.

STAFFORDSHIRE.

Stafford.—House, Eastgate Street, for Mrs. C. A. Finlay.

Motor garage, Gaol Road: extension for Gaol Square Motor Garage Co., Ltd.

SURREY.

Carshalton.—Hospital: proposed day nursery (£860) and maternity ward (£500).

Richmond-on-Thames.—Nos. 46-47 George Street: addition for Messrs. Lyons & Co., Ltd.

"Ferndale," Kew Road: addition for Messrs. C. E. Sturgis & Son.

The "Old Ship" p.h., King Street: additions for Young & Co.'s Brewery, Ltd.

WARWICKSHIRE.

Foleshill.—Two houses, Crescent Avenue, Stoke, for Mr. F. Smith.

Mission Hall, Holbrooke Lane, for the Church Trustees.

WILTSHIRE.

Bromham.—Cottage, Chittoe: addition for Mr. Webb.

YORKSHIRE.

Glasshouses.—House, Hillfoot Farm, for Mr. W. Robinson.

Heckmondwike.—Bakehouse, Queen Street, for Mr. D. Lister.

Building, Spen Vale Street, for Mr. H. Spivey.

Business premises, Westgate: alterations for the Heckmondwike Co-operative Society.

Knottingley.—Twenty-four working-class houses for U.D.C. (£5,100).

Owston.—Three hundred houses for the Bullcroft Colliery Co.

Slaithwaite.—Motor garage, Howgate Road: extension for Messrs. Bamforth Brothers.

WALES.

Port Talbot.—Welsh Calv. M. Chapel, Taibach.

SCOTLAND.

Annan.—Glove Factory, Mafeking Place, for Messrs. W. Tyrer, Sons & Co.

Buckie.—Motor garage, Cross Lane, for Mr. G. M'Kenzie. Smithy, Baron Street, for Mr. G. Smith, junior.

Dundee.—Warehouses, Hilltown, for Messrs. A. & S. Henry & Co., Ltd.

Greenock.—Business premises, Ingleston Street: alterations for Messrs. J. & R. Houston & Kerr.

Glasgow.—Shield Hall Works, Govan: tinware factory extension, for the Scottish Co-operative Wholesale Society, Ltd.

Building, Commercial Road: re-erection for the Globe Co., Ltd.

No. 2 Finnieston Quay, for the N.B. Elec. Welding Co.

Still house, Crownpoint Road, for Messrs. W. B. Dick & Co., Ltd.

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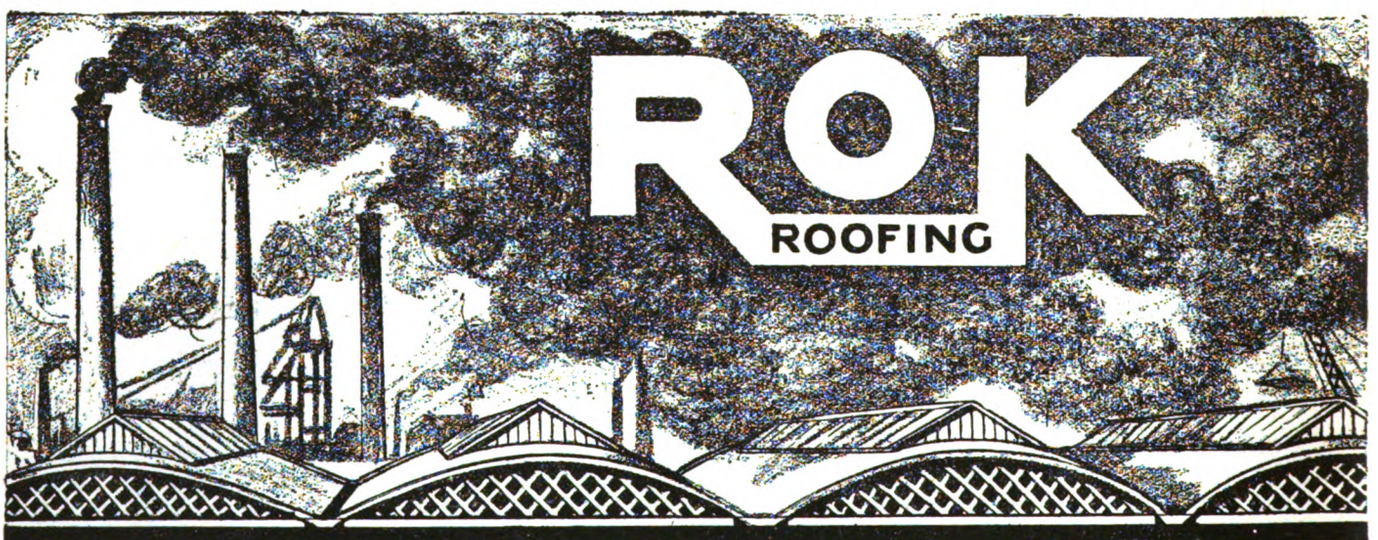
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THE ARCHITECT

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FORTHCOMING EVENTS.

Monday, June 5.

Royal Institute of British Architects: General Meeting (Business), at 4.30 P.M.

Wednesday, June 7.

Royal Archæological Institute: Paper entitled "Goldsmiths' Work in the Dark Ages," by Sir Martin Conway, M.A., F.S.A., in the Apartments of the Society of Antiquaries, Burlington House, W., at 4.30 P.M.

Friday, June 9.

Royal Sanitary Institute: Conference on Sanitary Administration under War Conditions," at 10.30 A.M. (two days).

ARCHITECTURE AT THE ROYAL ACADEMY.—IV.

CONTINUING our notice of the domestic work in the Architural Room, we come to Mr. J. Hatchard Smith's "House in Kent," a big Georgian block with red-brick dressings to plum-coloured walls, which may be meant by the water-colour artist as expressing either plaster or brick, Crowborough for choice to meet present-day whims, vice Luton purple, the now discredited artistic fetish of the recent past. Red-tile roofs and dormers, also à la mode, complete a design which does not range beyond the limits of safe precedent.

In his "House at Shottermill, Surrey," Mr. Edward J. May gives us one more instance of his highly skilful handling of the "farmhouse type." With the simple elements of brick ground storey, tile hanging and tile roofs, wood mullioned windows and tall brick chimney-stacks, a picturesque, home-like exterior of simple articulation encloses an interior full of quaint conceits, yet eminently workable in plan.

Quite different in tone is the near neighbour, on the Academy walls, by Messrs. Castle & Warren, entitled "Grey Walls," Weybridge. Based on seventeenth-century motifs, we have here a stone house, full of quaintnesses in form and texture, with cut brick chimneys and mullioned transomed windows, a well-composed and picturesque manor house. Mr. Harold Trimnell's "House at Chesham Bois," in red brick, timber, and plaster, fails not from either paucity or plenity of motifs, but from the incongruity of those introduced. A comparison between "Grey Walls," Mr. May's house at Shottermill, and Mr. Trimnell's collation points the lesson that it is neither the abundance nor the absence of many varying motifs that counts in design, but the congruity and harmony of those that are employed.

The "House and Studio: Falmouth Harbour," by Messrs. W. A. Forsyth & H. P. G. Maule, is a very quiet and satisfying design in genuine half-timber on a stone plinth, surmounted by an unbroken big tile roof. "An Entrance Gate and Covered Way," by Mr. Henry M. Fletcher, is an addition to an existing house, No. 4A Porchester Terrace, Bayswater, and shows refined scholarly work with well-proportioned classic detail and good wrought-iron gates.

A symmetrically disposed block with a small tail and symmetrically grouped openings is the key of Mr. George H. Paine's "New Vicarage for St. Peter's Church, Hampstead, N.W.," an orderly and restrained design of Tudor type. Amongst the designs for interiors Mr. Frederic Towndrow's "Design for a Bedroom" is noticeable for its reposeful character, its tester bed, and, excepting only a small circular-top table, its rightful adherence to straight lines of wooden furniture.

Mr. Arthur Keen's single contribution this year is a sheet of plans and elevations, geometrically drawn, of a "House recently built at Limpsfield." This is treated with white walls and hung tiling, stone being introduced for the dressings. A notable point is the strict avoidance of gables in the tile roofs and adherence to hipped ends even for the dormers. A quiet and restful character prevails throughout the design.

A striking and unfortunate confusion of scale is seen in Mr. Clyde Young's "Additions and Alterations to Sharnbrook House, Beds," wherein a giant staircase-window, with unrelieved semi-circular head in brick, crushes in effect a stone entrance below treated with order and pediment, introducing a multiplicity of detail to a much smaller scale.

As a successful study in modern Greek, Mr. Herbert J. Harding's "Proposed Studio, St. John's Wood, N.W.," is worthy of notice; whether this type of detail, engrafted on a form reminiscent of an Egyptian temple, is the most suitable for an English twentieth-century artist's workshop in the groves of the Evangelist is a matter of opinion, but certainly the designer has very happily solved the problem of the big painting window, which appears quite a harmonious component of the main façade, above a lower projecting entrance block. Another quite satisfactory application of Greek manner and detail is to be seen in Mr. Eustace C. Frere's "General Medical Council: detail of entrance," in which carved caps of pure Greek detail, and a deep sculptured frieze, contrast with plain, broadly treated surfaces of Portland stone. The drawing is signed by the architect as executant, and is a charming piece of water-colour work somewhat in the manner familiarised by Mr. Walcot.

"Smalt House: interior of a bedroom," by Mr. M. H Baillie Scott, is a characteristic antique treatment with internal structural timber-work and revealed ceiling joists, the furniture, of which a tester-bed is the principal item, treated in seventeenth-century fashion.

Mr. Paul Waterhouse's design for "Island Buildings: Mount Melville," has strayed—or been promoted—to a place of honour in the Water-Colour Room, by reason, we presume, that the charming group of buildings masses so excellently with its locale, and is so skilfully depicted in a water-colour by Mr. J. A. Swan, that the drawing, in the view of the Academy pundits, is to be valued as a picture—a high honour for a work of modern architecture.

The remaining drawings in the Architectural Room, not included in either of the categories with which we have already dealt, include the usual aftermath of recent competitions, business premises, and more or less public institutions.

As an admirable example of the successful, logical, and expressive treatment of modern building construction, we have Mr. Francis W. Troup's "Blackfriars House, New Bridge Street, E.C.," in which the skeleton steel-framing is adequately clothed and made the

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foundation of the architecture, with its structural lines adopted and emphasised rather than cloaked with a dressing of architectural features of applied columns and inconsequent ornament. Certainly here we have one of the most satisfactory pieces of architecture that modern conditions, frankly accepted, have produced.

On the more usual lines of using architectural detail of past ages as decoration for a large modern building is the "Cunard Building, Liverpool: perspective drawing," by Messrs. Willink & Thicknesse. Herein the time-honoured, but illogical, device of including windows of two floors in a Brobdingnagian application of an architrave treatment, used in Italian renaissance for single windows, is applied, whilst another storey is disguised by the adoption of a deep frieze, also an Italian renaissance device, with elaborately carved cartouches between the windows, the scale of which is set by that of the giant window-dressings below. By the height presumably required by the purposes of the building, the authors have been enabled to treat their ground floor as a single storey, with big semi-circular headed windows, which thus maintain the scale of the principal features, and so dodge the difficulty of treating a modern office building of many floors. There could scarcely be a better illustration of the two opposed methods of dealing with the conditions of typical modern buildings than is afforded by a comparison of the Cunard building with Mr. Troup's.

Less successful than Mr. Troup's design, but still a frankly modern piece of architecture, expressive of present-day needs and construction, is Messrs. Smith & Brewer's "Shop in Tottenham Court Road," in which the big plate-glass windows are not allowed to spoil the design, but furnish the keynote of its structural grouping, which embraces the whole building, and does not start, in the usual banal fashion, above the shop windows. The architectural conception suffers rather than gains from the dodges by which the draughtsman has satisfied his desire to introduce brilliant colouring.

NOTES AND COMMENTS.

ALTHOUGH regrettable, it is scarcely surprising that the opposition before the Marquess of Bristol's Select Committee of the House of Lords made on behalf of the æsthetics and amenities of London failed to prevent that Committee from approving the Bill setting forth the South-Eastern and Chatham Railway Company's proposals for the strengthening of Charing Cross Bridge. If we consider the nature of the alternative that would be presented to the minds of the Committee—the safety of the public who travel over or the pleasure of the public who look at the bridge—we cannot wonder that the proposals for safety should outweigh the proposals for beauty.

Characteristically, the Irishmen of Dublin are not satisfied with the Government's proposals to make an ex gratia grant to sufferers by destruction of property in Dublin during the recent rebellion. The Dublin Fire and Property Losses Association (1916) has put forward a grievance of those under-insured and those not insured at all against fire. Obviously the man who does not insure against fire must be assumed to understand that the risk still remains, and that he is in effect his own underwriter. Destruction of property by other agencies than fire, especially in war time, is an obvious risk, and the man who does not insure carries his own risk. Therefore he has no logical claim on the State to make compensation when he sustains a loss.

In the plenitude of discussion that is now going on in various parts of the country relating to our home-grown timber, much advice of varied and often contradictory tenor is being showered gratuitously upon owners of woodlands. They are by some being advised to clear out their plantations of forty or fifty years old timber and replant. By others to look carefully over their woods and see what should be cut down now and what should be left alone. The root of the whole matter is that timber-growing as a commercial adventure is too much of a gamble to encourage the outlay of capital in the hope of financial profit. Experts in timber prices are hopelessly at variance as to what will be the state of the market for home-grown British timber in five years' time. The man who plants to-day spruce and fir for pit props knows that he has to wait forty years before he can cut, whilst for building timber and hardwood, his successors must wait twice that time or longer. What the market will then be is too indefinitely vague even to tempt the prophets. If afforestation and the use of home-grown timber is to be seriously encouraged in this country it can only be done by the State, which must shoulder and undertake the whole business.

At the annual conference of the Ironmongers' Federated Association some very well put truths were expressed by Mr. E. J. P. Benn on "Trade After the War." As reported by the "Birmingham Daily Post" he pointed out that when the war was over we would find ourselves engaged in an industrial struggle not only with Germany, but with America, Japan, and every other commercial nation. If we were to meet with any success in this struggle, it seemed to him it would be necessary for us to begin by altering most of our opinions about trade. We had to learn to look at trade from a national, and not from a personal, point of view. The future of British trade and its chances of success were, he thought, in the hands of the trade associations. They had to work together against the common enemy instead of fighting amongst themselves while the enemy was capturing their markets. This involved a very considerable development of ideas of co-operation, combination, association, and organisation. It seemed to him that their present association methods were about as defective as their Consular system, and their ideas with regard to both required thorough revision. The trade association of the future would not be a loose organisation which could be kept happy with a subscription of one guinea a year. It must be a powerful machine designed upon lines which could be of real use to its industry, and the subscription to which was worth at least £100 a year to any of its members. He did not advocate the creation of a Ministry of Commerce as a separate Government Department, for the only possible way of dealing with the question was trade by trade—one trade at a time—and the only possible way of dealing with any one trade was through a properly organised trade association. He therefore advocated the creation of a Government Department which might even be a department of the existing Board of Trade, whose functions should be the control of trade associations. They might appoint a controller of trade associations in the same way that they had to-day a controller of companies and other things. The function of this official should be to see that every trade possessed a representative trade association, and to help and encourage that association to undertake a programme of work on behalf of the Government for the promotion of the interests of that trade. The Minister of Commerce or the Controller of Trade Associations would require to have six or seven under-secretaries running departments to deal with questions like education, industrial research, export trade, labour, statistics, and finance, exhibitions, and advertising. Each trade association should be given the work of studying the problems for its own industry under the guidance of the Minister or Controller.

Nottingham Corporation mean to make their town prosperous, if business methods can do it. They have a committee whose sole duty is to bring new industries to the town, to which is attached an official described as the Industrial Development Officer.

This is how the Nottingham authorities sum up the advantages of their city:—"As a commercial and residential site it ranks high among the cities of Midland England. Its local taxation stands at a low level,

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DRAWING ROOM.

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GREAT ROKE, WITLEY, SURREY: DINING ROOM.

Messrs. BUCKLAND & HAYWOOD-FARMER, Architects.

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GREAT ROKE, WITLEY, SURREY: LANDING.

Messrs. BUCKLAND & HAYWOOD-FARMER, Architects.

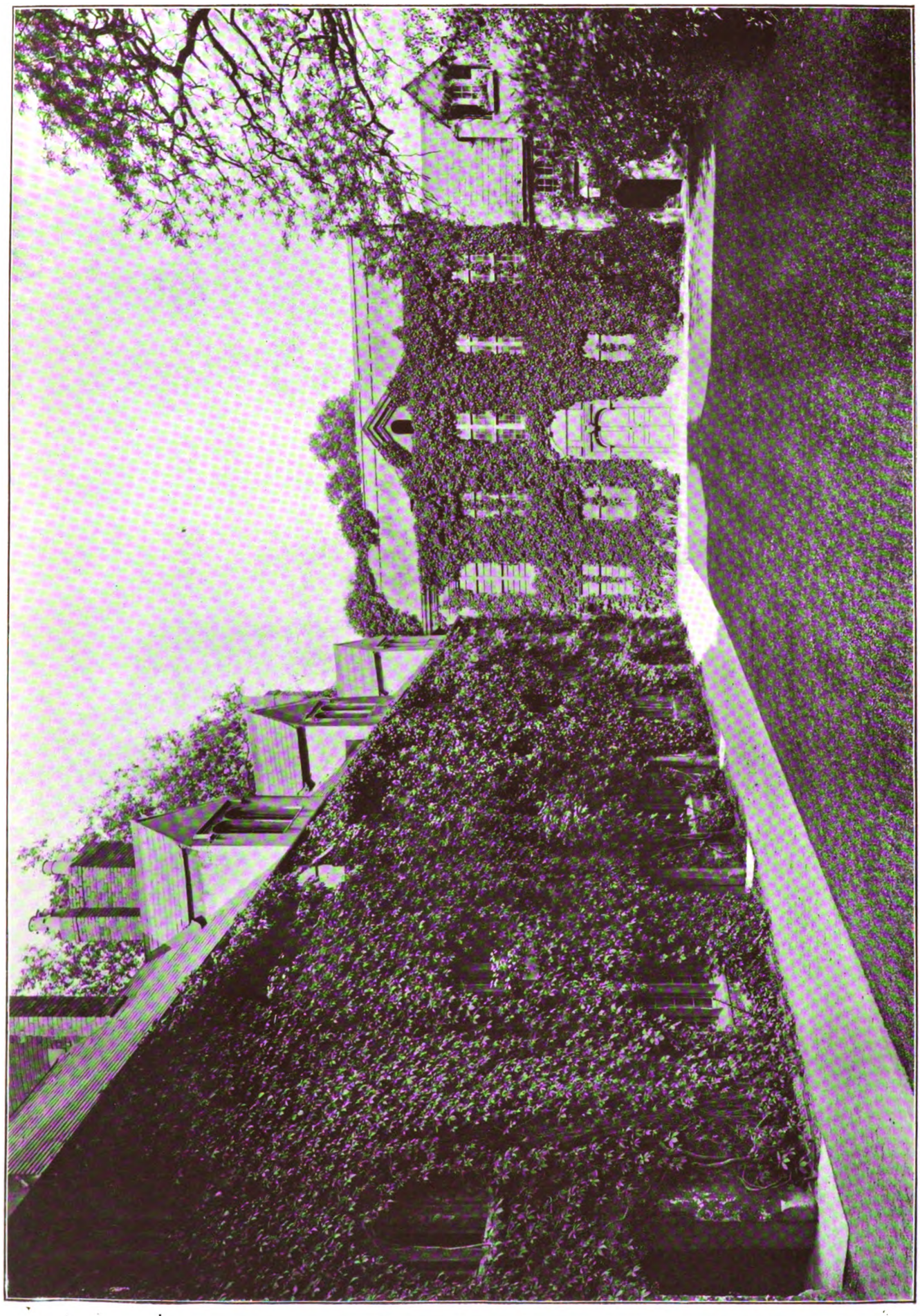
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OXFORD COLLEGE SERIES. No. 164.—ST. EDMUNDS HALL: QUADRANGLE.

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although the civic administration is of the most advanced type. The great municipal enterprises afford unsurpassed advantages to the population and attractions, nowhere else equalled in the same combination, to manufacturers. But these advantages, instead of taxing the resident and the property owner, actually reduce his expenses, for they are contributing vast sums to the relief of rates. Efficiency is the note of the Nottingham municipal system. To manufacturers and traders seeking a new working ground, whether they contemplate the erection of works or the renting of a factory or building, Nottingham offers advantages which no other city can surpass—low rates of local taxation, cheap and efficient gas and electricity, cheap coal, good water, cheap transit, abundant and well-trained labour, a clear atmosphere and agreeable residential qualities for families accustomed to refined surroundings. With all these Nottingham holds out a welcome hand to the new arrival within its boundaries, and offers support to every industry."

Those are the lines on which Nottingham booms herself. They are altogether admirable and are sure to command attention. But this is not all. Having caught the eye of the industrial developer, the Corporation provide facilities by which a business bargain may be entered into. And this is where they are going to score. Preferential rating is a method which will strike the average mind as the obvious course by which the new industry is attracted. But such a method is likely to create discontent and may prove an injustice to those who have had to struggle against the initial disadvantages of heavy rates which so hamper a new industry in its early stages. Where possible, particularly in the case of a brand new industry, facilities are nevertheless judiciously offered in connection with rating which are bound to go some way towards a compact. At a meeting of the Industries Committee a few days ago, the Assessment Authorities expressed their willingness to assist any new industries to the fullest extent in the matter of rates, so that in their initial stages those industries should not be overburdened. They will consider each case on its merits, and do their utmost to attract newcomers to the town. That is something, but it is not all. Machinery and plant are not rated. That is a big advantage over other towns, including Liverpool. Then, how do they deal with the sites which are still available for factories and commercial buildings? The town council is itself the owner of many fine sites which they are ready to let rent free for a year or two in order to get a further new industry securely planted in the district. There are other landlords also who are prepared to hold out a welcoming hand to new industries.

In a letter to the "Morning Post," Mr. F. Sydney Eden puts forward the following recommendations for the preservation of old painted glass in war time.

1. As old leadwork offers less resistance to explosive force than modern leads, the liability of ancient glass to irretrievable damage by bombs or gunfire is less when it is in its original lead binding than when it has been releaded in modern times. An explosion may drive ancient glass from its original leads, but there is a strong probability that much of it will escape fracture and so be available for restoration. Therefore, leave undisturbed until after the war all old glass which may be in original leadwork, however bad its condition may be.

2. Protective external boarding should be placed some feet away from the glass and be backed with sandbags.

3. Existing external lights of modern white glass—especially thick plate—put up to protect old glass should at once be removed, and if protection against everyday risks is necessary wire netting substituted for them. These external lights, as recent events have shown, are an additional danger to old glass exposed to the effects of an explosion.

4. If the plan favoured by some—removal of old glass until after the war—be adopted, a coloured tracing of every panel removed should be made prior to its removal, so that there may be no difficulty in correctly replacing pieces of glass which may fall from their settings in the course of removal. Neglect of this precaution is a fruitful source of misplacement of old painted glass. Many instances occur to me, some ludicrous and others serious misrepresentations of history, but considerations of space forbid pursuit of the subject.

5. When old glass is damaged by explosion the débris should be left where it falls. If this be done an expert hand will have a chance of effecting an intelligent restoration, but if the fragments are swept together in heaps and people are allowed to carry away pieces as mementoes—as happened not very long ago in a case known to me—all possibility of doing so is barred.

6. When peace comes all ancient glass removed in war time should be restored to its place with scrupulous accuracy. This suggestion may perhaps be thought superfluous, but the modern history of old painted glass proves the contrary. The curio dealer is always ready to buy ancient glass for exportation to the United States, and legal custodians of the fine old stuff are at times beguiled by the fascinating cry of new lamps for old ones.

ILLUSTRATIONS.

"GREAT ROKE," WITLEY, SURREY.

THIS house occupies a sandy site, on the top of a hill, in the vicinity of the charming and old-world village of Witley, Surrey.

The house is well planned, and provision was made by the architects for a large music-room on the northern front, piercing through to the first storey, forming an important feature of the design, with its long window and small-paned big bay window overlooking the drive and front entrance to the west, giving the room an abundance of light. On the same floor and adjoining are the smoking-room and dining- and drawing-rooms. In the plan the kitchen court is the centre around which are set a number of service and store rooms, with engine-house, workshop, and garage arranged conveniently together. On the first floor are situated the bedrooms (six in all) and dressing-rooms, with schoolroom and bathrooms. Accommodation is provided on this floor for a special suite comprising two bedrooms, bathroom, and a sitting-room that opens out on to a wide balcony. The top storey contains the bed and bathrooms for the servants.

"Great Roke" is built externally in random rubble, with a cavity and a brick lining nine inches thick, and faced with local Bargate stone. The windows and other dressings are of Doulting stone, and the roofs are covered with tiles, obtained from the Nyewood Brick and Tile Company.

The work was carried out from the designs and under the personal direction of Messrs. Buckland & Haywood-Farmer. Messrs. Henry Lovatt, Ltd., of Wolverhampton, were the general contractors. The sub-contractors were: Messrs. Henry Hope & Sons, Ltd., of Birmingham, who supplied the casements, leaded lights, art metal-work, door furniture, heating apparatus, rainwater heads, grates and mantels; Messrs. Doulton & Co., Ltd., of Lambeth, S.E., sanitary fittings; Messrs. Craven, Dunnill & Co., Ltd., wall tiles. The excellent plasterwork, of which we shall give some illustrations next week, was executed from the architects' designs by Mr. R. M. Catterson-Smith, now associated with the Birmingham Guild, Ltd., of 45 Great Charles Street, Birmingham.

OXFORD COLLEGE SERIES.—NOS. 164 & 165.—ST. EDMUND'S HALL.

WE this week commence illustrations of the small but interesting college known as St. Edmund's Hall, of which we now present two views of the quadrangle.

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AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—XXII.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

THE Chiesa del Redentóre, another stately church by Palladio, is situate close by, on the island of Giudecca, Venice. This is one of the principal works of this famous architect, a simple and dignified edifice begun in 1577 after the great plague of the previous year, which carried away about 50,000 of the inhabitants of the city and lagoons. This Franciscan church is another of those plague-churches erected as a votive offering for preservation from the ravages of the disease, although it is difficult to perceive exactly where the preservation came in, excepting perhaps in the fact that there still remained some of the inhabitants to make the offering.

This distinctive pile, which was not completed until 1592, with its classicist façade and two slender towers rising above the dome, forms, perched high upon a fine flight of steps, an imposing feature, more owing to its isolated position and mass than its detail. The interior is particularly sublime and unostentatious, and the various details of treatment are well worth a visit to examine.

The island of Giudecca, separated from that of San Giorgio Maggiore by the narrow Canale della Grazia, and from the main portion of the city by the Canale della Giudecca, is really a series of islands (about twelve in number) split up by numerous narrow, picturesque canals crowded with pretty little fishing-craft. These islands form the fishing suburb of Venice. The Giudecca Canal is about one mile long and at its widest part nearly a quarter of a mile across.

The steamboat may be taken from the station of Santa Croce, near Il Redentóre, to the Fondamenta delle Zattere, from which a fine view of Palladio's church is obtained, and close by stands the church of I Gesuati, erected in 1726-43 by Giorgio Massari, the ceiling being decorated with paintings by Tiepolo. Tintoretto is represented by a "Crucifixion," situate close to the third altar. The Palazzo Giustiniani Recanati occupies a site near by I Gesuati.

Making in a direction directly northwards, past San Trovaso and San Barnaba, through seemingly miles of narrow winding alleys, behind that famous group of ancient Palazzi, the Rezzonico, Giustiniani, and the Fóscari, across the Rio Foscari, after a very interesting, if somewhat tiring, walk one reaches I Frari. A speedier and to many a more pleasant route would be by taking the steamboat at the Accademia station close by the Ponte di Ferro to San Tomà, the next station to the north, near a dull sixteenth-century Renaissance palace, and from thence through the quaint little streets, lined on either sides with open shops, to I Frari.

This church, known also as Santa Maria Gloriosa dei Frari, is built entirely of brick, with the exception of the big circular columns within the edifice, and is one of the most beautiful churches in Venice. Gothic in style, it is nearly 300 feet long and about half that in breadth at the transepts, and is cruciform in plan with a short eastern arm terminating in an apse. This Frari church was erected in 1330-1417—it is said upon the site of an earlier structure of 1250 date—by the Franciscans, or Frari Minori di San Francesco, who settled in Venice about 1227.

It is stated by some authorities that the present building was commenced in 1250 and completed in 1338. The apparent discrepancies in the recorded dates of the commencement and completion of many of these great churches of the Middle Ages would seem to indicate that the early one referred possibly to a preliminary edifice, which gradually made way for the permanent and more pretentious fabric.

The funds to erect the Frari were, it is stated, begged by the followers of Francis. One eminent writer upon Italian architecture states that Nicola Pisano was the architect, that the first stone was laid on April 3, 1250, and that the campanile was begun in 1361 under Jacopo Collegi, and completed in 1396 by Pietro Paolo, his son.

Practically every important Italian town or city has two huge churches, dating generally from the thirteenth century, and founded by the Dominicans and the Franciscans, two accepted religious orders of the Middle Ages. Most of these architectural monuments remain even to the present time as evidence of the power of those popular preaching orders.

The two churches in Venice are SS. Giovanni e Paolo and the Frari, representing the Dominicans and the Franciscans respectively.

In mediæval Europe the religious revival, dating from the early part of the thirteenth century, was marked by the rise of the Friars. The followers of Dominic and Francis commenced, like so many of the famous religious sects, in a very small and insignificant manner, particularly directing their attention to the poorest classes of the community; but soon their services were so largely attended that the buildings necessary to accommodate their congregations more resembled cathedrals than churches, and eventually became the temples of worship for the great and powerful, and the favourite resting-places for the rich and mighty, whose magnificent tombs form one of the principal sights for the tourists of to-day.

The design of the west front is by no means pleasing, although it has a fine Italian Gothic doorway; as a whole, it is almost entirely without beauty.

The lofty, unbuttressed apse opposite the Scuola di San Rocco is without doubt the noblest feature of the whole church, and, architecturally, the most interesting, with its beautiful traceried windows, having graceful tracery within the transomes. The interior of this famous and magnificently dimensioned edifice is of special interest. There is that air of impressiveness about the arrangement of the simple plan consisting of a nave and aisles of six bays, transepts with three eastern chapels to each, and a choir of one bay with an apse of four bays projecting beyond the others. The picturesque campanile stands in the angle between the north transept and the nave.

It must be generally admitted that the interior is finer than the exterior would lead one to expect; the nave, with the huge area of the transept and the fine perspective, gives that noble and sublime effect so characteristic of many of these great churches of the Middle Ages. Much of the beauty of the Frari is produced by the simplicity and purity of the groining which is executed entirely in brick, and springs in the aisles from pilasters corbelled out of the walls about midway in height. The lofty cylindrical columns are extremely majestic, and have capitals of carved foliage.

Apart from the points of considerable architectural interest within and associated with the fabric, the church contains many fine monuments typical of Italian art, and sumptuous tombs of Venetia's eminent and mighty men, of Doges and Senators, painters and sculptors. Among the monuments is one put up by Ferdinand I. to Titian, by Luigi and Pietro Zandomeneghi. The great master sits in the centre, with the muses of sculpture, architecture, painting, and wood-carving around him. A Renaissance tomb of Pietro Bernardo, executed by Alessandro Leopardi about 1520, is a beautiful piece of work, and is only one of many of outstanding merit. The valuable altar-pieces from the Frari are exhibited in the church of San Tomà during the restoration of the former church. These pictures include many of the best examples of Alvise Vivarini; Marco Basaiti; Giovanni Bellini (the "Frari Madonna," painted in 1488, an elegant altar-piece in three panels, from the Sacristy of the Frari, considered the most perfect of Bellini's Madonnas; the beautiful Renaissance frame is by Jacopo da Faenza); Titian's famous "Madonna of the House of Pesaro," one of the master's best works, painted in 1526 for Bishop Jacopo Pesaro; Bartolommeo Vivarini, an altar-piece in three parts, "St. Mark with four other saints," painted in 1474, and another in three parts painted in 1482. Also others by Bernardo Licinio and

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THE CHURCH OF SANTA FOSCA, AND THE CAMPANILE OF THE DUOMO, TORCELLO.

Giovanni Dom Tiepolo—a truly wonderful collection indicating the prominence and importance of the Frari in its early days. Titian's famous "Assumption of the Madonna" was originally the high-altar-piece of the Frari, and is now in the Academy.

We next visit SS. Giovanni e Páolo, a Dominican church, considered by many, next to St. Mark's, the most celebrated in Venice. This vast Gothic edifice was begun in 1234 (according to some authorities was built in 1330-90) on the model of the Frari; but, it is said, was not completed until 1430, when it was consecrated. It will be noted that in the case of this church, as with the Frari, the disparity in the recorded dates of its commencement is serious, practically a hundred years.

The evolution of Venetian Gothic through its various stages is exemplified in this church of SS. Giovanni e Páolo, a vast domed structure of brick. The plan is very similar to that of the Frari, and the interior is magnificent and remarkable, and crowded with many treasures. It is 105 yards long and 47 yards wide, and is supported by ten round columns. It is said that the bodies of the Doges in the days of old lay in state in this great temple, and most of them, owing to the space in St. Mark's having been occupied, are buried here. The great brick apse, the most striking, as in the case of the Frari, portion of the exterior is imposing and beautiful, and as with its contemporary, is devoid of buttresses.

Going round into the Campo SS. Giovanni e Páolo, one sees the magnificent equestrian statue of Bartolommeo Colleoni, the famous soldier of Venice, who upon his death in 1475 left his vast fortune to the Republic on condition that his statue should be placed in the Piazza di San Marco. This was, it appears, against the law, and the condition of the bequest was ingeniously evaded by the erection of the statue in the Scuola di San Marco. This statue, one of the finest of its kind of the Italian Renaissance, was designed by Andrea Verrocchio, the great Florentine master of Leonardo da Vinci; but dying before it was completed, Alessandro Leopardi, the Venetian master before-mentioned in connection with the bronze flagstaffs in La Piazza, undertook the task of completing the work; the greater portion is due to the latter artist.

In this Campo rises the beautiful Renaissance façade of the Scuola di San Marco, which stands out so prominently and stately as an architectural composition, when compared with the ghastly baroque façade of the Ospedaletto church built by Baldassare Longhena in 1674, which unfortunately one is almost bound to pass on the way to the Campo di SS. Giovanni e Páolo; its very atrociousness prevents it being passed unnoticed or unseen.

Although the writer has indicated his intention to deal with the churches only before closing his notes upon Venice, yet this Scuola di San Marco is worthy of more than a passing mention. Erected in 1485-95 by Martino Lombardo, it forms a fine example of that characteristic Venetian style of the early-Renaissance introduced by the Lombardi.

It has an extremely rich façade of beautiful early-Renaissance decorative work, peculiar to the Lombardi treatment, and it is worth much careful study.

This building, with the adjacent Dominican Monastery, has, since 1815, been used as the Ospedale Civile (public hospital). Returning to a brief consideration of SS. Giovanni e Páolo (or San Zanipolo as the Venetians generally speak of this church) one finds an unfinished, heavy, uninteresting brick west front, with, however, a splendid late portal in the Gothic style, but Renaissance in feeling. The early-Christian sarcophagus, containing the bones of Doge Jacopo Tiepolo 1229-49 (who was the founder) and Doge Lorenzo Tiepolo, his son, 1268-75 (said by some to be the brother of Jacopo), stands to the left of the portal. The south side of this huge and impressive pile, with its great dome, transepts, and chapels, is certainly without beauty. As already mentioned, the interior is of colossal dimensions, and is imposing by reason of the great height of the nave and the vastness of its size, but is not otherwise striking or inspiring. The plan is again exceedingly simple, consisting of a nave, simple aisles, short transepts, an apse, and two apsidal chapels on each side thereof.

To the left of the principal entrance is an immense mausoleum of the victorious Doge Pietro Mocenigo, 1474-76, with fifteen statues by Pietro Lombardo and his sons Tullio and Antonio; a magnificent and tremendously expensive Renaissance monument, delightful in decoration, design, and execution.

Close by is the tomb of Doge Giovanni Mocenigo, 1478-85, by Tullio and Antonio Lombardi—a piece of fine work, but not equal to the last named.

Another huge tomb of the Mocenigo family (Doge Alvise, 1570-77, and Doge Giovanni Bembo) occupies the space provided by the west wall, and completes the monuments to the glorification of this powerful and rich family.

There are many other monuments to and tombs of great senators and others the following being some of them:—

Doge Ranieri Zen (died 1268), Marco Antonio Braga

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dino, who defended Famagusta in Cyprus against the Turks, and was flayed alive after he surrendered.

Doge Bertuccio Valier, 1656-58, and his son Doge Silvestro, 1688-94, the largest tomb in the church, described by some as "a rich baroque work in marble," and by others as atrocious and appalling, but in any case characteristic of the general run of Venetian baroque style—a statement not intended in any way complimentary.

Paolo Loredan, 1365, a Gothic tomb; Doge Michele Morosini, died 1382, the most elaborate in the pointed Gothic style: Doge Marco Cornaro, 1365-67, another Gothic tomb; Doge Andrea Vendramino, 1476-78, a sumptuous and costly piece of early-Renaissance work by Tullio and Antonio Lombardi, assisted by Alessandro Leopardi (some say designed by the latter), and completed in 1493, considered the most beautiful monument in this style in Venice.

Doge Leonardo Loredan, 1521, another late-Renaissance tomb; Condottiere Giacopo Cavalli, died



COTTAGES IN TORCELLO.

1384 or 1394, by Paolo delle Massegne, a General of Venetian troops in the war against Genoa. Another monument to Doge Giovanni Dolfin, 1361; and a number of tombs, including those of Doges Antonio Venier, 1382-1400; Pasquale Malapiere, 1457-62, a fine Florentine early-Renaissance work; also Doge Michele Steno, 1400-43; Doge Tommaso Mocenigo, 1413-23, a fine work showing in its decoration the transition from the Gothic to the Renaissance styles, by Pietro di Niccolo Lamberti and Giov. di Martino, of Florence. Then Doge Niccolo Marcello, 1473-74, by Pietro Lombardi, a good example of early-Renaissance work, ascribed by some authorities to Alessandro Leopardi, and many other interesting and beautiful works. Within the little chapel of St. Dominic, the ceiling or roof of which is painted by Tiepolo, there are six reliefs in bronze by Mazza (1670) depicting scenes in the life of the saint. The right transept has a very fine sixteenth-century stained-glass window, and there are a few pictures in various parts of this church well worth examining.

This particular district of the city has no further attractions, and if time permits during the last day or two in Venice the church of San Rocco and the Scuola di San Rocco, in the immediate vicinity of the Frari, are worthy of a little consideration.

(To be continued.)

ARTERIAL ROADS IN GREATER LONDON.

THE Second Main Conference in connection with the provision of arterial roads in Greater London was convened for Friday, May 19, by the Local Government Board, and held, by permission of the Middlesex County Council, at the Guildhall, Westminster. Alderman W. Regester (Middlesex County Council) was elected chairman.

The proceedings were opened by the chairman reading a letter from Mr. Walter Long, President of the Local Government Board, who mentioned that when the first conference of the series was held Mr. John Burns, as President of the Board, had presided. He himself would have liked to have done the same for the latest one, when the members were reaching the end of their labours, and to have thanked them for their personal sacrifice of time and labour; but such a course was impossible. Consequently he had asked Mr. Hayes Fisher, M.P. (Parliamentary Secretary to the Board), to represent him. Unhappily the war had rendered it impossible to hope that any recommendations they might make involving the expenditure of large sums of money could be brought into operation for a very considerable time, and he felt that this much-to-be-regretted fact ought to be realised by all interested in the Conference's important work.

Mr. Hayes Fisher, M.P. (Parliamentary Secretary to the Local Government Board), similarly emphasised the fact that at the present crisis any recommendation involving a large expenditure of public money must take some considerable time before it could fructify. As representative since 1885 of a large London constituency, and also from his connection with the Local Government Board, he had become familiar with the problems surrounding the question of arterial roads. There was probably not one of those present who did not agree that "sorrow's crowning sorrow was remembering happier things." After the Budget of 1914 he for one had hoped some millions would be available for the work. But it was not to be. Certainly they had seemed to have advanced a little in the direction of unity and towards the appointment of some central body for guidance. There were at present eighty local authorities within fifteen miles of London, and in addition four Government Departments—all concerned with the roads. But it appeared they had just got rid of one of the four Departments. He was told that at the instigation of the Retrenchment Committee the Traffic Department of the Board of Trade was in process of being abolished. The finances of the Road Board might be transferred after the war to the Local Government Board, while the Home Office might well limit their functions to the mere regulation of traffic. Therefore they were left to the conclusion that there would shortly stand out one Government Department which would have more or less the control of the design, planning, and carrying out—always in conference with the local authorities—of the great main arterial roads. If the conference wanted to advance they must place their affairs in the hands of one strong Cabinet Minister. It would be perfectly idle to disguise the fact that, however much they might plan to get complete unity, there stood before them the great financial monster that was strangling everything at the present time and preventing them moving towards the solution of great social and traffic problems. It would be idle to deny that the

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National Exchequer was not in the same position, and was not likely to be for years to come, that it was in 1914, when it looked as if the Chancellor of the Exchequer was going to place some millions of money at the disposal of the country for the solution of road traffic and other problems. But they could still do a great deal. Local authorities must be encouraged to avail themselves of the Town Planning Act, and when doing so to consult one another. They could turn their attention to the urgency of at once fixing the line of certain roads where a great deal of open land was now available that would get quickly built on and the roads blocked unless they were fixed. He was not very sanguine as to estimates prepared now being of use three or five or more years hence. At the Local Government Board Office they were reluctant, too, to undertake further duties, for they had only fifteen men left who had not gone to the war. But a great deal could be done by the local authorities by foresight. The important question was "Notwithstanding the war, what can we do to prepare for a brighter time?" One could not be at the Local Government Board without knowing that every day schemes for better water supply, better drainage, and better sanitation had to be turned down, and when the war was over what would most be wanted in this country was capital. Nevertheless, at the Local Government Board they would find not only sympathy and encouragement, but such practical aid as the Board could give.

The Chairman then proposed page by page the adoption of the report summarising the conclusions of the six sectional conferences. Representatives of local authorities were allowed to enter a formal objection to any line which they considered to fail to represent their local wishes. This was done to ensure they will be consulted again at the indefinite date when the report is acted upon.

Mr. Elgood, as representing the Ruislip-Northwood Urban District Council, proposed a long resolution which was eventually cut down to the following: "That in view of the vital importance of securing the harmonious development of Greater London by carrying into effect carefully considered schemes for the construction of new arterial roads, and, more especially, in view of the opportunity, which will be afforded by the construction of such roads, for the profitable employment of surplus labour in any period of unemployment which may arise after the war, this conference, in submitting to the Prime Minister and the President of the Local Government Board the conclusions of the sectional conferences, desires respectfully to make the two following suggestions:—

"(1) That all practicable steps should immediately be taken to induce Local Authorities to secure the reservation of the necessary land for such roads by the exercise of their powers under the Housing, Town Planning, &c., Act, 1909.

"(2) That in order to encourage and aid Local Authorities in thus exercising their town-planning powers—thereby securing that the projected roads shall be provided at a minimum of cost—the Government should, by means of co-operation between the various departments of State and the County Authorities concerned, arrange that Local Authorities preparing town-planning schemes for their respective areas and including in these schemes the projected arterial roads, shall be given a guarantee that a considerable proportion of the cost shall be borne by a Central Authority."

Mr. Elgood at the outset said he wished to explain that the motion did not originate from his Council. It was the outcome of very serious consideration by certain representatives of local authorities, and confirmed at an informal meeting held under the ægis of National Housing and Town Planning Council. The first suggestion in the motion made it clear that it only applied to such of the roads in the report as were in areas which might be properly subjected to town-planning schemes. It did not apply to areas in the County of London. The suggestion had been intentionally restricted for various reasons, two of which were that it was most important to secure the routes which were not built upon or fully developed, and that the routes in the inner circle of London were not required until the outer arteries were formed. At the deputation in 1913 to the Prime Minister, as a result of which these conferences had been called together, that gentleman stated that he was much impressed with the view that there ought to be some authority to deal with the co-ordination in the making of arterial roads and town-planning schemes. But while reserving that question for consideration, Mr. Asquith said in effect, "Let us first see how far the problem can be met by local authorities using the powers they already possess." The proposed motion was an acceptance of that challenge, and if it was adopted by the conference, it would afford the Prime Minister a definite assurance that local authorities were willing to play their part if they received the necessary encouragement and guarantees. He urged them to consider the position which had now been reached. After most mature consideration, some general agreement had been reached as to the lines of some of the more important new and improved main roads in Greater London. What then was the next step to take? Surely to secure, not that such roads should be immediately made—that would be impossible, even if desirable—but to secure that present conditions should not be so changed hereafter as to make it more difficult and costly in the future. In other words, it was the settling and preservation of the routes which was most important. The time and manner of their construction were quite separate considerations. The use of the Town Planning Act was advocated for one reason, therefore, because by it the routes could be kept open without immediate expenditure, and vast sums of money would be saved hereafter. Moreover, it proclaimed definitely the development of the future, and so guided the development of the present. As it was local authorities alone who shouldered the responsibilities under town-planning schemes, it was only right that nothing beyond what was a fair local burden should fall on them. The general principles underlying the proposals for securing the projected roads at a minimum of cost under the town-planning schemes might be shortly summarised as follows:—

1. That the necessary land should be dedicated free by the owner as part of a town-planning bargain. He did not know that this matter would be disputed as being unreasonable, but one might point to what had already been done on these lines in schemes already approved.

2. That the cost of making up the road of a width and character required by local by laws should eventually be borne by the owner.

3. That any excess cost beyond the last mentioned should be borne by a central authority.

4. That any compensation under sec. 58 of the Town Planning Act should be borne by a central authority.

5. That the roads when made should be "main roads."

It would still remain to be determined what was meant by a "Central Authority," but he submitted that was a matter for the Government and not for them. There was no suggestion that the central authority should be an existing one. The term was purposely used so as to include all or any of the existing authorities, or if thought proper, an entirely new authority. Whatever the body might be, he wished to state most emphatically—and it was a point of very great importance—that there was no idea whatever of asking the Government to undertake any immediate or definite expenditure, and that the construction of the roads was not necessarily contemplated in the near future, unless, added Mr. Elgood in conclusion, as a means of meeting possible unemployment.

The subsequent discussion on the above resolution revolved primarily around the financial aspect of arterial roads, and especially as to guarantees to local authorities who wanted to know how they stood before embarking on any costly scheme. Other members argued it would be

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DUNSTABLE PRIORY CHURCH. [Photo by Mr. T. G. HOBBS, F.R.G.S.

a mistake to endeavour to obtain any definite pronouncement at the present crisis on such a point. This latter view was supported by Mr. Hayes Fisher, M.P., who committed himself to the opinion that since arterial roads would be national benefits, they ought to be contributed to by the National Exchequer. Moreover, he agreed as to the value of such schemes in providing possible employment for the hundreds of thousands of men who will no longer be needed for the Army and Navy at the termination of the war. The meeting finally dropped the more definite portions of Mr. Elgood's motion, and adopted it in the more general terms given above.

Sir Aston Webb, R.A., then moved, on behalf of the R.I.B.A. and the London Society, the following resolution:—

"That, having regard not merely to the large amount of time and trouble that has been expended in the consideration and selection of suitable routes for arterial roads in Greater London, but to the extreme urgency of preserving the opportunity for creating the arterial roads which have been found by these Conferences to be necessary, and to the important part these traffic avenues will play in the future development and growth of the Metropolis, this Conference is desirous of recording its opinion that it is imperative that steps should be immediately taken through the Local Government Board or other authority to secure the routes of such new or improved thoroughfares as are set forth in the important traffic proposals contained in the report of the Conference on Arterial Roads in Greater London."

Sir Aston Webb said that to the deputation in 1913 Mr. Asquith expressed himself as deeply impressed with the necessity for some central authority controlling the schemes for arterial roads, and had suggested the holding of those conferences which had proved a very great success. An extraordinary amount of unanimity had been arrived at as to the main lines of the roads. But he feared their time and labour would be wasted unless the Government saw fit to give to whatever authority might be thought most suitable some statutory powers for securing the lines of route. The question of cost would be dealt with afterwards. It seemed to him that now the war was on was the most suitable time for considering such schemes.

Sir Alexander Stenning seconded the resolution as representing the Surveyors' Institution. Unless, he said, these arterial roads are fixed, town-planning schemes could not know where they were going. The preliminary work should be proceeded with at once, though the roads need not be begun. He hoped the suggested central body would be the Local Government Board. He did not think they were going to get the local authorities to agree upon the conflicting interests involved in laying the exact line of an arterial road. It should therefore be in the hands of a central authority to make them.

DUNSTABLE PRIORY CHURCH.

THE name "Dunstable" has a curiously familiar sound; and yet it is difficult to associate it with anything definite. The town has undoubtedly had an interesting past, and is not unmindful of its connection with the Glacial Period and Primeval man. Yet no great event in history is linked to it. Nor has it even given a name to any article of commerce. If the truth be known, perhaps, Dunstable is often confused in the inexact public mind with succulent "Whitstable."

To lovers of architecture, however, the town may be known for its Norman priory church—a remarkable interior photograph of which we give herewith. The date usually accepted for its foundation is 1132. It was one of three established by Henry I., and the original nave has alone survived. Of the history of the priory an excellent account is given by Mr. Worthington Smith in his "Dunstable: its History and Surroundings." As the author enjoyed the advantage of some professional training for the profession of architecture, as well as over half a century's acquaintance with the structure, he may be quoted without fear:—"The entire nave is Norman, and dates from 1150 to 1200. Older work dating from 1132, or soon after, once existed at the east end, but the oldest work was destroyed at the demolition

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of the religious houses. The eastern end of the nave and the lower great columns and arches are the older, the triforium above the nave arches the newer. There was originally a walk along the triforium from east to west, on both sides. The present fillings of the triforium arches are modern imitations of Perpendicular work. Originally there was another tier of arches, or clerestory, but this has vanished. Whether the original roof was of stone or wood is uncertain; the present roof is modern. The side chapel at the east end of the south aisle is modern, or practically so; the two next bays south of the iron rail are Norman; the three western bays are new, or imitation Norman. The unworked blocks of stone in the nave capitals are modern. The gallery at the west end is Early English, and fine work of its class. . . . The lower part of the present east wall represents the pulpitum, or choir screen, which separated the people's church from the old choir. . . . It is obvious, then, that the base of the present eastern wall was, first, a choir-screen with a central door; next, a rood-screen, with two side-doors and three niches. It was probably furnished above with a large rood or figure of the crucified Lord. When the choir was demolished, the rood was destroyed, and the base of the wall built upon to make an eastern wall. At this latter time, therefore, there was no rood-screen. The present wooden screen is a newer chancel-screen, and it dates from the end of the fourteenth century. It was removed at an uncertain date from the east to the west end of the church, and placed up in front of a modern organ gallery. During the last restoration it was again removed from the west to the east."

In conclusion, it will probably interest our readers that the accompanying photograph was taken at midday while it was snowing. There was but little light anywhere, though some everywhere, for the snow-mantle even illuminated the usually dark roof. Much actinic light generally streams into the building, but upon this occasion the human eye could not easily have discerned the sun's position, nor the light and shade in the aisle, although so plainly visible in the photograph.

A "Lightning" backed whole-plate, 4¾-inch lens and 32 stop were used, while the time of exposure was forty minutes.

THE SURVEYORS' INSTITUTION.

THE Council for the year 1916-17 is constituted as follows:—*President*: George Francis Stewart. *Vice-Presidents*: Arthur Lyon Ryde, John Hubert Oakley, Andrew Young, John Willmot. *Ordinary Members of Council*: Sir Robert James Thompson, Joseph Henry Sabin, John McClare Clark, James Inglis Davidson, Edwin Savill, Edmund Walter Rushworth, John David Wallis, Dendy Watney, George Corderoy, Ernest A. Rawlence, Herbert Mansfield Cobb, Edward Samuel Cox, Bernard Marr Johnson, Ernest Holtham Leeder, Henry Hartley, Charles Herbert Bedells. *Professional Associates of Council*: Stanley Hicks, John Maughan. *Associates of Council*: Sir John Wolfe Barry, K.C.B.; George Mallows Freeman, K.C.

Mr. George Francis Stewart, the recently elected President of the Surveyors' Institution, was born in 1851. He was educated at Marlborough College and Trinity College, Dublin, where he graduated Senior Moderator and Gold Medallist in 1872. He then entered his father's office, and in 1878, on the death of the Earl of Leitrim, went down to the County Leitrim in charge of the extensive Clements estates in that county. Since 1879 he has been a magistrate and grand juror, and since 1900 Deputy Lieutenant of the County of Leitrim, in which he has a large number of agencies. He served as High Sheriff in 1893, and for many years has represented the county on the central executive of the Landlords' Convention.

In 1885 Mr. Stewart became a partner in the well-known firm of J. R. Stewart & Sons, 6 Leinster Street, Dublin, in which his nephew, Mr. H. P. Stewart, F.S.I., is his partner. Of recent years he has been engaged in many important arbitration cases, and has negotiated a large number of sales under the various Irish Land Acts, and amongst his principal agencies may be mentioned the Kingstown Estate, on which, since the expiry of the old leases in 1903, a great deal of improvement has been effected. He is Vice-Chairman of the Irish Unionist Alliance, with which body he has been intimately associated since its formation, and he is also connected with several philanthropic and charitable societies. He is also a member of the Senate of Dublin University (Trinity College), and in 1902 he was elected a director of the Bank of Ireland, of which he has been Governor for the last two years.

ARCHITECTS AND MILITARY SERVICE.

THE arrangements made by the Royal Institute of British Architects and the Queen's Westminster Rifles for the enlistment of members desiring to serve together have unfortunately had to be cancelled, as the War Office has found it necessary to stop further recruiting for this regiment.

Fresh arrangements have now been made with four other battalions in which members of the Royal Institute and other architects will be welcomed if they will come forward without loss of time.

The 20th London Regiment (T.) has vacancies for some 500 men. If sufficient architects joined this regiment an "Architects' Company" would be formed, and they would be kept together during training. The regiment has two battalions in France, and a third battalion is being formed for the purpose of supplying drafts to the first and second battalions. Intending recruits should apply to Major Dodd, Holly Hedge House, Blackheath. (Telephone: Lee Green 962.)

Lieut.-Colonel S. W. Cranfield (A.R.I.B.A.), Commanding the 3/7th D.C.O. (Middlesex Regiment), states that he is prepared to take fifty or sixty architect recruits in his battalion. They must be medically fit for service abroad. Intending recruits should write to Headquarters, 3/7th D.C.O. (Middlesex Regiment), Solefields Camp, Sevenoaks, and they will receive a free railway warrant. On reporting they will be enlisted and will be given leave to settle up their private affairs.

For the two other battalions applications should be made at once to Lieut. and Quartermaster H. G. James, 22nd Battalion (R.) King's Royal Rifles, Norfolk House, Laurence Pountney Hill, E.C., or to Captain Briggs, 23rd County of London Battalion (T.), 27 St. John's Hill, Clapham Junction.

A SCHEME FOR THE DEVELOPMENT OF AGRICULTURAL LAND.*

By FRANK NOEL KEEN, Barrister-at-Law, of the Parliamentary Bar.

STATED shortly, the main idea of the scheme I propose to put forward in this paper is that agriculture should be organised in units of so large a size as to command the most efficient and economical administration, but so regulated as to give to each man working in the unit an incentive of profit-sharing and proprietorship comparable with that which stimulates the efforts of the smallholder.

I suggest that as much as can conveniently be acquired of the agricultural land within a certain area of country should be owned, controlled, and managed as one co-operative concern in which the people working upon the land would have the predominant power and interest as shareholders.

What area of land should be taken as the unit would depend in any particular case upon the circumstances of the locality concerned, but in order to get some idea of the possibilities of a scheme of this kind we might

* Abstract of Paper read at the ordinary general meeting of the Surveyors' Institution, held on Monday, May 8.

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assume the existence of a small town, surrounded by a wide stretch of agricultural land. Perhaps in such a case a radius of ten miles from the centre of the town might be drawn as a limit, and in the belt of country thus defined ten or fifteen thousand acres might be acquired in the first instance, and added to from time to time as opportunity arose. I mention ten miles because it suggests itself as the sort of radius to which a service of motor-transport vehicles might extend.

It is obvious that if the whole of the 600 and odd square miles comprised within a circle of ten miles radius were farmed as a single undertaking the business would be one of enormous proportions. I do not suggest that it would be possible to merge together the whole of such an area, but something very much less than the whole would still provide a business of such magnitude as to permit the development of large schemes of farming improvement, the sale and use of produce to the best advantage, the securing of large economies in finance and administration.

It would be interesting to see a statement of all the different kinds of industry or business that can be carried on in conjunction with agriculture; but I have not the necessary equipment for its compilation, and I doubt whether the imagination is capable of making in advance an exhaustive list which would not need supplementing when an undertaking has actually been established, and was prepared to entertain the idea of carrying on any such industries or businesses as branches of its work. Among the most obvious, however, are dairies, butter factories, cheese factories, bacon factories, jam factories, beet sugar factories, flour mills, seed crushing, egg preserving, fruit preserving, cider making, basket making, saw mills, manufacture of boxes, hoops, and other wooden articles.

Besides industries of this kind there are various services of the utmost importance to the development of agriculture whose introduction and successful working may be rendered possible or greatly facilitated by such a scheme as I am proposing.

Perhaps the most important of such services to mention is motor transport. Taking, for purposes of illustration, the case I have imagined of a small town surrounded by a large belt of agricultural land, it is pretty obvious what a stimulus would be given to agricultural production, and what a convenience would be afforded to the traders in the town and to the population of both town and country, if a large service of trade motor vehicles were provided for the purpose of collecting agricultural produce from the whole belt of the country within ten miles from the town, and carrying out into the country materials and machinery required for agricultural purposes, and goods bought in the town by the people in the agricultural area. Such a service could well be provided by an organisation of the type I am suggesting.

Among the other services which could be rendered by such an organisation to the interests of agricultural development are the provision of better facilities for the storing, preservation, grading, and packing of agricultural produce, for the slaughtering of animals, for the controlling of game and the destruction of vermin, for improving the breed and dealing with the diseases of animals, for getting low railway and canal charges, for selling commodities to advantage and obtaining new markets and channels for sale, for regulating sales as between local purchasers and dealers at a distance, for studying the needs of consumers, for securing speed in the despatch of perishable goods to consumers, for regulating stocks and minimising disadvantages due to fluctuations of price, for effecting insurances, for procuring supplies of seeds, artificial manures, feeding stuffs, implements, and labour-saving machinery, for testing the quality of materials purchased and agricultural products, for the training of agricultural workers, for circulating knowledge and information affecting agricultural purposes, for banking, finance, account keeping, and the recording and preservation of statistics, for watching and appealing against rates, taxes, and assesments, for the drainage and reclamation of agricultural land, for receiving sewage and disposing of it by irrigation, for economy in the arrangement of fences and hedges, for the extension of the use of electricity and the telephone, and the production of electric and other power, for the housing of agricultural labourers.

Having thus dealt with the character of the undertaking to be carried on, I have next to consider the body by which it should be owned and conducted. This need not necessarily be the same in all cases. There is an advantage in having different types of organisation to discharge similar functions in different localities, because their relative merits and defects can then be compared on the basis of actual experience.

There is something to be said in favour of the idea of putting an enterprise of this kind into the hands of a body representative of the public. The extent of the powers and the importance of the interests to be controlled make the exhibition of public spirit in the direction of the undertaking highly desirable. But there are disadvantages, as well as advantages, in placing such a concern entirely under public ownership and management. Although municipal trading has achieved great successes in this country, the incentive of private profit remains, and will continue in the future, a great inducement to enterprise and skill in administration, especially in the case of an undertaking of a novel type. The question of area also raises a difficulty in regard to public management. The geographical limits for the operations of such an undertaking as I am proposing would probably have no correspondence with the area of jurisdiction of any of the existing local authorities, and the constitution of a new authority for a special area and a special purpose usually involves considerable difficulties.

It appears to me that a parliamentary company is the most useful form of organisation for the purpose in view, such a company, depending, as it does, upon the passing of a Private Act of Parliament for its creation and the original definition and subsequent variation of its powers and constitution, is subject to large possibilities of criticism and limitation in the public interest, and yet receives a charter which enables it, within defined limits, to give free scope to its energy and enterprise in the pursuit of the particular interests upon which it is bent.

The constitution of a company by Private Act for a purpose of this kind has the additional advantage that it provides the opportunity for the granting of powers for compulsory acquisition of or interference with property, or other special powers designed to meet local difficulties, and this may well prove beneficial in the public interest, as well as in the interest of the company itself, where so large an undertaking has to be carried on.

There is a further reason which makes constitution by Private Act a desirable course. The design of the company being to promote the increased home production of food, a purpose of great national importance at the present time and for a long while to come, and the natural effect of the company's operations being to bring greatly added prosperity to the locality in which it works, there seems justification for it to look, in case of need, for some assistance from public funds, both national and local, in carrying out its objects, and particularly while private sources of capital are restricted as a result of the war.

While coming to the conclusion that company administration is the best to adopt, I think it is most desirable that the company should not be run in the interests of a group of outside capitalists, but that a large financial interest, and if possible the predominant interest in the concern, should be vested in those who are engaged in active employment under the company. By this means I should hope to secure the output of the best work for the company by all its farmers, labourers, and other

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employees, and, at the same time, a great improvement in the position of the labourers.

The particular type of co-partnership arrangement might vary in different cases, but one that I suggest might be tried is to engage all the employees upon the terms that one-tenth part of all remuneration received for their services should be returned by them to the company by way of payment for the allotment of ordinary shares or stock of the company. By this plan in course of time the bulk of the ordinary capital would probably come to be held by the employees, assuming that they did not get rid of their interests to outsiders. In order to prevent the last-mentioned contingency from arising, some embargo would need to be put upon the power of the employees to dispose of their shares or stock. Perhaps it might meet the situation to provide that every employee, so long as he remains in the service of the company, shall retain not less than one-fourth of the amount of the shares or stock taken by him from the company, and that no employee shall transfer any share or stock except to another employee.

With a view to further reducing the risk of control getting into the hands of outside capitalists, it might be stipulated that the voting power at general meetings should be confined to the holders of ordinary shares or ordinary stock, and that no one should be qualified to hold ordinary shares or stock unless he is an officer, employee, or tenant of the company, or is resident in the area within which the company is empowered to acquire land.

The means by which the company should be financed and the necessary capital should be provided is obviously a matter of great importance, particularly in view of the limited possibility of raising money through ordinary investing channels during the war and for some time after its termination.

The principal need of capital in the initial stages would be for the purchase of the land which the company is intended to administer. I suggest, however, that for a great experiment of this kind, designed to meet a national need, and fraught with such large possibilities of promoting agricultural prosperity, the public spirit of landowners might be successfully appealed to, and they might be induced to put their lands together into the common stock without immediate payment of money. The price of the lands transferred to the company might be agreed upon (or might by agreement be referred to arbitration or valuation), and the sum fixed might be discharged by the issue of fully-paid shares or stock of the company. If the company and its scheme commanded the confidence and the interest of the landowners, why should they not accept the shares as a satisfactory equivalent for the land parted with?

The tenant farmers might also be willing to take payment in fully-paid shares on the basis of a reasonable valuation of their interests, a collateral arrangement being made in suitable cases for the farmer to enter the service of the company as farm manager at an agreed rate of remuneration and for a fixed minimum period.

It will probably be said that although industrial and commercial businesses are often converted into limited companies on the footing that the proprietors accept payment in shares, and that they and their employees agree to enter the service of the company, agricultural landowners and tenant farmers have not in the past shown much disposition to surrender their property without hard cash or to change their existing status. As against this, I would point out that the war is rapidly developing a greater sense of community of interest, and we may expect to see landowners and tenant farmers, as well as other classes of the population, increasingly ready to modify their ideas in regard to both personal service and material possessions so as to meet national needs. The scheme I am proposing contemplates that the company will be a very large institution serving an important public purpose, advancing the welfare of the locality in which it operates, and governed by directors who command the confidence and support of the owners, farmers, and workers interested in the land. I think feelings of patriotism and public spirit would stimulate a disposition to join and help the institution.

I think also that an institution of this kind would be able to give the owners and farmers concerned some solid reasons for regarding its capital as a sound investment. The possibilities of a much larger output from English agricultural land are such that the more intelligent among them, at any rate, would probably realise that they could make more income out of shares in a carefully organised co-operative undertaking covering a wide field than out of separate estates and farms of ordinary size and character in their own exclusive possession. The more far-seeing should also realise that a large undertaking would help to insure them against the ill-effects of the period of depression which is likely to occur after the war, when foreign and colonial production and competition become strenuous, while financial stringency remains severe.

The problem of the sitting tenant I should thus propose to solve as far as possible by inducing him to come into the co-operative concern, transfer his interest in his holding to the company at a fair valuation, take shares in the company for a corresponding amount in payment, and become a manager for the company, superintending the work of others over a certain area of the company's estates.

Some sitting tenants, if unwilling to venture upon so considerable a change of status, might be left temporarily undisturbed, or might be persuaded to exchange their holdings for others to be let to them by the company, and the company might, as a temporary measure, set aside some portion of its estate for letting in this way.

In the case of both owners and tenants who cannot be prevailed upon to co-operate financially, the company would have to face the question of buying them out in cash, agreeing the purchase money where possible. In cases where no agreement is possible, and the control of the particular land concerned is of importance to the development of the company's scheme as a whole, the company might seek from Parliament compulsory powers of purchase. The company might be granted the right of obtaining compulsory powers of acquiring land and interests in land by Provisional Order of the Board of Agriculture, confirmed by Parliament, just as a sanitary authority may, by Provisional Order of the Local Government Board, obtain land compulsorily for sanitary purposes.

Assuming that the necessary capital were provided by these several means, and that the land were acquired at fair prices, and that the undertaking were not loaded with any capital charges unrepresented by assets of real value, there seems every reason for expecting that with capable and honest management an adequate financial return would be secured. The company would be intended to carry on in combination various types of business which would be capable of being run profitably under the ordinary plan of separate ownership. Is it not a reasonable inference that they must be capable of being run still more profitably, if advantage is taken of the economies in expenditure and the mutual assistance between different departments which become possible when all are carried on together as a single organisation, and if the agricultural output of the company's area is increased by the systematic and scientific methods of management which so large an organisation would be able to apply?

To start on a comparatively modest scale, and grow by gradual stages, is probably the course best calculated to secure ultimate success. However wisely and carefully the position and powers of the company be defined in the Act of Parliament by which it is incorporated, and however able and upright the directors be to whose hands the organisation of the undertaking is entrusted, many people will be timid and sceptical about the policy of entrusting the lordship over so large an area of country and so extensive a system of industry, as I have suggested, to a single company until they see the institu-

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tion actually started and working on satisfactory lines. To see beneficial results from a small-scale beginning, combined with obvious openings for extension, would soon serve to reassure the timid, and develop the greater trust and wider outlook required to bring the scheme gradually to its full fruition.

The element of profit-sharing the scheme contains is calculated to stimulate to the full the activities of the workers. The large-scale organisation on which it is based would give those activities a good field in which to operate. Thus there would exist a natural incentive for the best output of work in all branches of the concern, while the combined management of one great area would afford the readiest facilities for bringing quickly into operation changes of method required in the national interest, and particularly changes that necessitate increased outlay of money, such as the breaking up of poor grass lands and their conversion to arable purposes, upon the need for which the committee laid stress.

If it is feared in any quarters that company management would tend too much to commercialise the countryside, and to take away from rural life its attractiveness, I think that fear may be dispelled. If it were a case of a group of international financiers coming to exploit our agricultural land under the exclusive influence of a selfish love of gain there would be need for apprehension. But that is not at all the sort of idea I am seeking to place before you. What I have in my mind is an institution, watched and controlled by Parliament, in which the people engaged in rural avocations would co-operate together, so that their joint efforts should be consciously directed to the best advancement of their own material interests and of those of the nation at the same time. Such an institution ought not to injure but to benefit country life on the social, moral and æsthetic sides. Both the greater monetary resources it would make available, and the greater opportunities it would provide for association and intercourse, should lead to the development of a fuller and happier life as well as a more comfortable material environment.

THE GOVERNMENT AND ART.

THE Royal Society of Miniature Painters recently held their twenty-first annual exhibition at the Grafton Galleries, W., and arranged in connection with it a short series of lectures to be given on each Wednesday in May. The opening lecture or causerie was by Mr. E. Rimbault Dibdin, curator at the Walker Art Gallery, Liverpool, who took the above topic for treatment. In his introduction he remarked that the title might not seem to have much connection with an exhibition of miniatures and illuminations; but in one respect at least it is appropriate, inasmuch as it would be a lecture in miniature—whether or not containing any illumination the audience could best decide at its termination. Such brevity would not be due to the subject. A series of lectures, or a book, might be written on the relations past and present between Governments and art, even though one solely considered the matter as affecting this country. Until modern times art could only thrive when nurtured by the great ones of the earth. The Church, the State, princes and potentates made its chief activities possible, and decided the subjects and styles to be employed. Mediæval artists in obedience to the wishes of their masters produced religious—or perhaps one should say ecclesiastical—pictures, or else adventured in the domain of classical lore opened for them by the Renaissance. This was especially the case in Italy, and the masters of the North followed suit; but gradually the Flemish and Dutch painters found a more convenient field in the representation of familiar scenes and incidents, and so laid down the true foundations of modern painting.

In this country art grew slowly under the shadow of that foreign competition which, apparently, it is one of our national infirmities to encourage, which brought into the service of our kings and nobles Holbein, Rubens, Janssens, Vandyck, Mytens, Lely, Kneller, and many more. Even the great Elizabeth, who believed in England for the English, does not seem to have done much to encourage native painters; though her action in regard to the Hanseatic League helped to make England a free nation, and under her benign influence our arts of poetry and music excelled the rest of the world. Charles the First was a great art patron, and though he preferred foreign painters, his collections might eventually have done much good in advancing our own art. But he unfortunately showed less skill and wisdom in matters more essential in a monarch, and so came to a tragical end. Since him we have had no monarch so fond of art, and our art has grown sturdily, if slowly, without much encouragement from our rulers, and without that Church patronage which obtains in Catholic lands.

After the Stewarts had lost the throne and comparative freedom came in with Dutch William, our arts sprouted anew. The English novel began with Defoe and Swift and continued to flourish under Richardson and Fielding. The drama began to recover from the French influences of the Restoration. The essay was made memorable by such writers as Steele and Addison. Our music was distinctively national. At last in Hogarth modern English painting began, an art like the others essentially popular. He was, of course, despised by those nonentities who followed foreign models to please the nobility. With the arrival of the first George the Dutch influence was discounted. The taste of George I. and George II., so far as they had any, was essentially German. English music was crushed by German competition, and the giant Handel reigned supreme until far into the nineteenth century. Indeed, even now we have not freed ourselves from the obsession that foreign music, especially German, is the only true music; and though Handel is no longer supreme, his place is held by Germans much less desirable. He at least lived, worked, and died in England, and his later English style was to some extent based on the majestic manner of our own divine Purcell.

George III. was relatively an Englishman, and he was, with all his faults, patriotic and in sympathy with his subjects. And he seems to have been sincerely interested in the arts. Although he almost worshipped the music of Handel to the exclusion of anything English, he encouraged the English school of painters, which had begun to flourish before he came to the throne. At the right moment he gave his royal support to a band of secessionists from the Art Society, which traced back to Hogarth and the Foundling Hospital, and founded on a secure footing that Royal Academy of Arts which, after nearly 150 years, England still has reason to be proud of, although there are never lacking critics to rail at it. But, as everyone knows, artists are just like Irishmen—never satisfied with the constituted authority; always "agin' the Government." This strenuous striving for the best possible, for the ideal beyond human attainment, is the most valuable motive force in the art creator, and we must recognise its value even while we deplore its bad effect on the artist as a mere man of business.

We have been trained to regard the French Revolution as one of the disasters of modern Europe, perhaps because out of it grew a despotism as pernicious as that which it destroyed. It is strange to look back on that struggle against the First Consul who became Emperor of the French, and to reflect that his great opponent on the Continent was the King of Prussia, who was our ally until, with some aid from his army, we won the Battle of Waterloo.

England justly hating Napoleon, of whom the world was well rid, hated the nation to which he did not belong, and which he had used to gain his ambitious ends—hated it because we did not discriminate. And we continued in amity with the far more dangerous ally that had helped to destroy him. All through the dull period of

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our intellectual life which followed Waterloo, German influence was strong. Our dramatists adapted Kotzebue and other German dullards. Our painters fell away from the great tradition of the eighteenth century, and one of the greatest thinkers of the nineteenth century devoted his powers to the glorification of Germans and Germany. To Carlyle, Frederick the Great was greatest of heroes. Carlyle, one fears, was fatally wrong as to what constituted greatness.

In 1840 a fresh wave of German influence arrived with that excellent personage Albert the Good, who did so much good in his dull German way, and also some harm. His best recommendation to the good opinion of posterity is that his son was that wise King and thorough Englishman Edward VII. We must try not to remember to his disadvantage one of his grandchildren, remembering that our present King, of whom we are all proud, is another.

English Pre-Raphaelites rose superior to their German inspiration. Leighton suffered from his German training. And in the art school at South Kensington we still have a monument to German system as applied to this country.

So far our monarchs as influences on art. Now to turn to Governments—what have they done? The National Gallery—which was founded on Mr. Angerstein's collection—has always encouraged foreign art as against British, and its inadequate grants were all spent on foreign works. Some improvement came when Sir Henry Tate forced a British Gallery on the Government. Whatever may be the virtues of Free Trade, one of its results has certainly been to drive pictures out of the country without even any advantage by way of tax. And the operation of new laws has tended to impoverish owners.

Now we come, said Mr. Dibdin, to the year 1914. The greatest war in the world's history begins, and the Government quite properly suspends grants for art purposes.

Not satisfied with this, it suddenly decided some months ago to close its museums and art galleries, although it continued, and continues, its machinery for art education. But what is the use in helping to create artists if art is to be wiped out? It was claimed that £50,000 per annum would be saved by the closure. This figure was disputed with some very good show of reason. A deputation, numerous and influential, called on the Prime Minister, and gained little or nothing. The best argument in favour of this course was the fact urged against it that in Germany museums and art galleries are maintained as usual during the War. We don't want to imitate Germany in any particular; it is no spiritual home for Englishmen.

Then comes the latest piece of legislation on the subject of art. There had been a cry for some time for taxation of theatres, picture-palaces, and other places of amusement, which seemed reasonable as such places always flourish in war-time, people requiring reasonable relaxation owing to the depression of spirit, and also because the tax would fall chiefly on the wage-earning classes, who, though rendered (to a great extent) more prosperous by the War, are exempt from taxation as compared with the overburdened middle class. The proposed tax was therefore justifiable, as originally understood, and the wording of the Bill, as well as the discussions on it, did not suggest the unexpressed possibilities underlying it. Then it was hinted that such possibilities existed, and questions were put. Would the Zoological Gardens be taxed because it was a place of popular resort, where the citizens studied natural history while administering buns to the brown bears? The Zoological Society has many influential members and friends; but no doubt it was not on that account it received exemption. Art, however, is not supported so powerfully. We have long cried in vain for a Minister of Art. And so when a question was put in regard to art exhibitions, which are at least less qualified to be classed as mere popular amusements, the reply was that they would come under the tax—at any rate as regards the Royal Academy Exhibition and One-Man exhibitions. Apparently, the Chancellor of the Exchequer knew nothing of the numerous other Royal art societies or those which are not Royal, including provincial exhibitions, which, while of great value to art and artists, were not even in normal times able to earn any or much profit, and in war time are pretty sure to be conducted at a loss. Representations have been made in the proper quarter by the Royal Academy and the Imperial Arts League, and also in the Press; but so far without effect. The profits of the Royal Academy Exhibition are admittedly considerable, but they are spent solely for the furtherance of art, on the splendid R.A. schools and on those art charities of which so little is heard, but which do such good work. Such profit has enabled our Royal Academy to be a strong central force in the European world of art.

Is there, asked Mr. Dibdin in conclusion, no means of averting the calamity which threatens our art, merely because a Bill intended for other and quite different purposes has been so vaguely worded and interpreted that art exhibitions have been dragged in? Theatres and picture-houses are run for profit, and the public will be quite ready to pay a tax which will yield a considerable revenue. Art exhibitions are not run for profit. The same tax on all the exhibitions of the country will yield a mere trifle, and it would have to be paid by the exhibition, for as exhibitions are not amusements the public would be driven away by an extra 2*d.* or 3*d.* The Government, therefore, while doing great harm to art would defeat its own ends, for exhibitions would cease to be held. Will no one take up the cause of the artist? He has done more than anyone else to help in the War, whether by

1. Actual active service.
2. Giving generously to war funds.
3. Producing pictures and posters to hearten us and help recruiting. Brangwyn, Hassall, and Raemaekers have been our best recruiting-sergeants.

They have done all this while commercially they have suffered more probably than any other class in the community.

This much for the artist—but art itself is far more important. Against constant neglect and discouragement it has struggled on and become, perhaps, the most important in Europe.

TECHNICAL EDUCATION AND RESEARCH.

A MEETING of the Circle of Scientific, Technical and Trade Journalists was held in the Hall of the Institute of Journalists at 5 P.M., on Tuesday, May 16, when the discussion commenced by Dr. Wm. Garnett on March 14 on "The Sphere of the Scientific and Technical Press in Relation to Technical Education and Industrial Research"—and to which allusion was made in our leading article on March 24—was continued.

In opening the proceedings the Chairman (Mr. L. Gaster) gave a summary of the proposals for the organisation of science and industrial research, which had been made by various associations, societies, and committees since the date of Dr. Garnett's paper (March 14). Mr. Gaster pointed out the desirability of closer co-operation in these matters in order to avoid overlapping of effort.

Professor R. A. Gregory showed that many of these proposals had an important bearing on the points raised in Dr. Garnett's paper, and Sir John Cockburn dwelt on the need for providing industrial opportunities for men trained in research, as well as for expanding the present educational facilities.

It had been announced that the Hon. W. M. Hughes, the Prime Minister of Australia, would address the meeting, but at the last moment a message was received stating that he was unavoidably detained on business of national importance. In his absence Mr. Gerald

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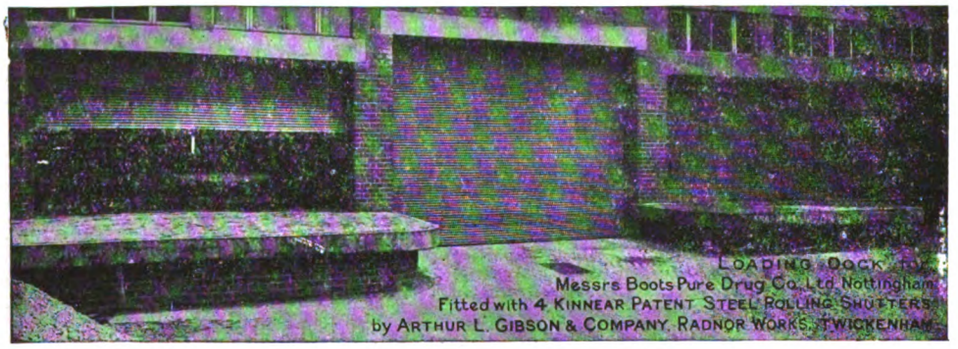
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Lightfoot, who is intimately associated with the establishment of a National Institute of Science and Industry in Australia, and therefore in a position to furnish authoritative information on this subject, addressed the meeting. In explaining the proposals in connection with this scheme Mr. Lightfoot emphasised the benefit of co-operation in scientific matters throughout the Empire, and the important functions of the Press in promoting the desired developments in technical education and industrial research.

Among others who joined in the discussion on Dr. Garnett's paper were the Right Hon. Arthur Dyke Acland and Mr. A. J. Mundella, who likewise alluded to the value of concerted effort on the part of the scientific and technical press. Finally, the following resolution was proposed by Dr. Garnett, seconded by Mr. E. J. Benn, and declared carried unanimously:—

"That this meeting urges upon the various associations, Institutions, and Committees engaged in the consideration of Technical Education and Industrial Research the necessity for co-operating in order to present a National Scheme for the consideration of the Government.

"That in any measure taken for the preparation and execution of such a National Scheme the co-operation of the Scientific and Technical Press should be secured.

"That this meeting is of opinion that the Press should use its influence to encourage the teaching of Science in schools and colleges of all grades, and to determine the proper position of Science in Civil Service and other examinations, especially with reference to the influence of these examinations upon education.

"That in the meantime it is desirable that all possible support should be given by the Press and the public to the work of the Advisory Council to the Committee of the Privy Council for the Organisation and Development of Scientific and Industrial Research, and that Industrial Associations should report to the Advisory Council on the facilities required for the conduct of research in connection with their particular industries."

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

Board of Trade Figures.

SIR,—I have been grieved for years to see editors blindly reprint the entirely illusory figures relating to diseases of occupation among painters printed in the Board of Trade "Labour Gazette," without modification.

My critical expert knowledge of the facts led me, at last, to approach the Editor of the "Labour Gazette," and Mr. McLeod has signed a very courteous reply, promising to modify the figures by the additional words "but notification of these cases is not obligatory" (see page 182, May 1916).

Just to justify my strictures allow me to point out that in factories, say, 3 per cent. of the notified cases of disease proved fatal. As twenty one fatal cases occurred among painters and plumbers who worked outside factories, it follows that about 630 cases occurred, including those twenty-one fatal cases. But would your readers be surprised to know that, instead of 630, only 74 cases were ever notified, the 21 included? Why was this? Because notification of these cases is not, nor has it ever been, obligatory upon the certifying surgeons under the Factory Act. The 21 cases were registered as due to lead poisoning; all were painters or plumbers. These men died during eight months, i.e., seventeen during four months ended April 1915 and four during four months ended April 1916. Being myself guided by other credible information, I believe that not one-tenth of the deaths due to lead poison are ever registered as such, but are said to be due to diseases otherwise described, such as paralysis, cerebral, kidney, liver, lung, and heart troubles, nevertheless mostly, in painters, either caused or hastened through using white lead or red lead. It is admitted that, on an average, painters' lives are shorter by eight years than all males; many of their children are mentally defective, and the number of them less than half their ancestral average. Also, that out of every 100 deaths among painters about thirteen or fourteen are due to lead poison (Report Cd. 7882, Wymans, London). In fact, Dr. Hayhurst, of Chicago, found that amongst 100 working painters whom he critically and medically examined about seventy showed evidences of chronic, though not of acute, plumbism ("American Journal of the Medical Sciences," June 1914).

Your readers may rejoin, "What, then, is the remedy that you propose for this deplorable sickness and mortality among house, motor, and ship painters?" My answer is this. There are already economical and entirely satisfactory white pigments which replace both white lead and red lead, including, inter alia, a very good one, until war broke out, based on hydrated oxide of zinc. Let every effort be put forth to provide an ample supply of such pigments, and the use of white lead will share the fate of German white lead, which latter, to the value of hundreds of thousands of pounds sterling per annum, was imported before the war.—Yours, &c.,

PHILADELPHIAN.

One Man Businesses and Compulsory Service.

SIR,—General sympathy has rightly been evoked by the hard cases of the men liable to be called up for active service who, after years of toil and perhaps much privation, have built up small businesses. If they are compelled to serve it is feared that their businesses will collapse and their connections be taken over by the big limited companies, which will still be able to "carry on," thanks not only to their superior organisation and resources, but more particularly to their being able to retain a sufficient number of experienced men capable of managing the various departments.

The Tribunals may be trusted to consider sympathetically all cases of the kind brought before them, but exemption will presumably be the exception rather than the rule, and numerous cases of severe hardship can scarcely be avoided. The position will at first sight doubtless appear to many to be desperate; but the owner of a business is not necessarily faced with the prospect of either closing his business or selling it at a serious sacrifice, as in a considerable number of instances it will doubtless be possible to save the situation by converting the businesses into private companies with limited liability. Where this course is taken the owner of a business will transfer it to the Company, and as Vendor he will take a number of fully-paid shares and also become a Director of the Company. But virtually the Vendor will retain the business in his own hands, and he need not part with the right to exercise control over it by appointing or removing managers or other members of the staff or in any other manner; he is also relieved from considerable anxiety by the knowledge that he will not be personally responsible for the payment of the Company's debts if, owing to mismanagement or other cause, the business should fail during his absence.

No doubt in a number of the smaller cases the wife of the proprietor will be left to carry on the business, but she will be technically in the service of the Company (whether she is a Director or not), and will be in a much less unfavourable position in the event of the Company being involved in difficulties than if she or her husband were personally responsible.

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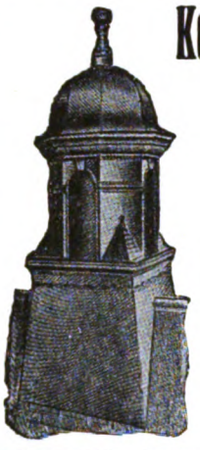
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"Municipal Engineering and the Sanitary Record."

SIR,—We shall be glad if you will kindly observe that, on the suggestion of a considerable number of our ever-widening circle of subscribers, the title of this Journal has been transposed from the "Sanitary Record and Municipal Engineering" to "Municipal Engineering and the Sanitary Record."

For the sake of brevity, in cases where correspondents wish to avoid using the whole title, it is recommended that the words "Municipal Engineering" only be used.—Yours, &c.,

THE EDITOR.

[We offer congratulations to our contemporary and wish it continued prosperity under its new title.—ED.]

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

DURHAM.

Consett.—Parish church: proposed enlargement.

Whickham-on-Tyne.—Brass foundry for Mr. W. Burrows.

LANCASHIRE.

Cadishead.—Wallpaper Works, Dean Road: extension for Messrs. Kinder & McDougall.

Skelmersdale.—Two cottages, Berry Street, for Messrs. Fairhurst, Ltd.

MIDDLESEX.

Hounslow.—Factory, Strafford Road, for Messrs. R. Beldam, Ltd.

Northolt.—Cottage, Greenford Road: additions for Mr. F. Purser.

Staines.—Factory, Dawley, for the United Glass Co.

NORFOLK.

Langley.—Proposed public elementary school for 100 places.

NORTHUMBERLAND.

Hexham.—Works for the Tyne Metal Co.

NOTTINGHAMSHIRE.

Mansfield.—Pleasley Vale Mills: addition for Messrs. William Hollins & Co., Ltd.
Cycle store, Stella Street, for Mr. S. Smith.
Marine store, Victoria Street, for Mr. C. Clough.

SUSSEX.

Horsham.—Horsham Engineering Works: additions for Anglo-American Oil Company.

WARWICKSHIRE.

Coventry.—Factory, Hawkins Road, for the Metallurgical Co., Ltd.
House, Belvedere Road, for Mr. E. Mortiboy.
House, Collingwood Road, for Mr. H. Davis.
Six houses, Queen Mary's Road, for Mr. J. Clifton.
Four houses and six garages, St. Andrew's Road, for Mr. T. F. Bird.
Laundry, Waveley Road: extensions for Mr. W. Neal.

Hillmorton.—"Bretford Hill": addition for Mr. Vaughan.
Two houses, Moyeady Avenue, for Mr. S. Robbins; also two houses, Dunchurch Road.

Rugby.—Liberal Club, Regent Street: alterations.
No. 235 Clifton Road: alterations for Mr. J. Tomes.

YORKSHIRE.

Huddersfield.—Proposed three hundred (or more) working-class houses for the Corporation.

Silsden.—Works, Keighley Road: extensions for the Silsden Dyeing Co., Ltd.

South Elmsall.—Ten houses for Messrs. Swift Brothers.
The Institute: additions for the Rev. A. Gould.

York.—Conversion of three cottages into one, Bay Horse Passage, Walmgate, for Mr. W. Dixon.
Office, Lendal, for Messrs. Pearse & Son.

WALES.

Swansea.—Smallpox hospital (£4,500).

SCOTLAND.

Aberdeen.—Premises, Hutcheon Street: additions and alterations. Mr. W. S. Boice, engineer.
Factory and store, Shuttle Lane. Messrs. Wilsons & Walker, AA.R.I.B.A., architects, 375 Union Street.
No. 382 Great Western Road: additions and alterations. Mr. W. E. Gauld, F.R.I.B.A., architect, 11A Dee Street.
The King's Engineering Works, King Street: extensions for Messrs. J. M. Henderson & Co.

Bo'ness.—Electricity Works: extension. The National Electric Construction Co., contractors (£12,000).

Duns.—No. 66 Castle Street: reconstruction for Mr. J. Scott.

IRELAND.

Castletown.—Workhouse: alterations, &c., for B.G.

Cloghroe (Co. Cork).—Creamery. Mr. W. L. Kelleher, architect, 53 South Mall, Cork.

Cork.—No. 30, Lavitt's Quay: rebuilding. Mr. J. F. McMullen, M.R.I.A.I., architect, 30 South Mall. Messrs. J. Delany & Co., contractors, 24 Henry Street.

Londonderry.—Upper Langfold Church: additions. Messrs. R. E. Buchanan & Co., architects, Castle Street.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 6,307. April 28, 1915.—George Powis, 109 Clacton Road, Walthamstow, Essex. Slabs or blocks for ceilings, walls, and wall coverings or plating.

6,319. April 28, 1915.—J. A. Davenport, 13 Harrington Street, Liverpool. Reinforced concrete structures and reinforced concrete construction.

4,563. March 23, 1915.—W. E. Muntz, 6 Bream's Buildings, Chancery Lane, W.C. Actuating device to hermetically close circular orifices, with a cone plunger on a conical seating.

8,902. June 16, 1915.—Alexandre Hanssens, 2 Avenue Desire-Dehors, Havre, France. Apparatus for forming boreholes in soft and loose sand or other loose and soft strata.

9,681. July 2, 1915.—Alexander and Arthur Peacock, 6 St. Thomas' Terrace, Newcastle-on-Tyne. Wood screws.

7,306. May 15, 1915.—Frederick Lowry, architect, 24 Broadway, Leigh-on-Sea. Concrete fence and like posts.

10,285. July 15, 1915.—R. J. Rogers, 41 Poplar Avenue, Edgbaston, Birmingham, and W. E. Cadwallader, 167 Crompton Road, Handsworth, Birmingham. Gas fires.

11,929. Aug. 18, 1915.—Cockburns, Ltd., David Cockburn, and Donald MacNicoll, all of Cardonald, near Glasgow. Stop valves.

13,555. Sept. 23, 1915.—W. J. Hermges, 11 Paternoster Square, E.C. Incandescent electric lamps.

14,282. Oct. 8, 1915.—Frank Pascall, 156 Charing Cross Road, W.C. Apparatus for automatically opening and closing supply of liquid to taps or cocks.

16,003. Nov. 12, 1915.—James Slater & Co. (engineers), Ltd., C. R. Allensby, and J. C. Robinson, all of 50 Wells Street, Oxford Street, W. Locking device for the doors of sterilising and other chambers.

Any of the above specifications may be obtained from J. D. Roots & Co.

THE Institution of Heating and Ventilating Engineers have decided, owing to the prevailing conditions at the present time, not to hold a summer meeting this year.

A RESOLUTION has been unanimously passed by the Dublin Industrial Development Association, requesting that, in connection with the rebuilding of the premises destroyed in the recent disturbances in Dublin, the scheme of reconstruction should be entrusted to Irish architects to design and carry out, and that, as far as possible, Irish materials should be used.

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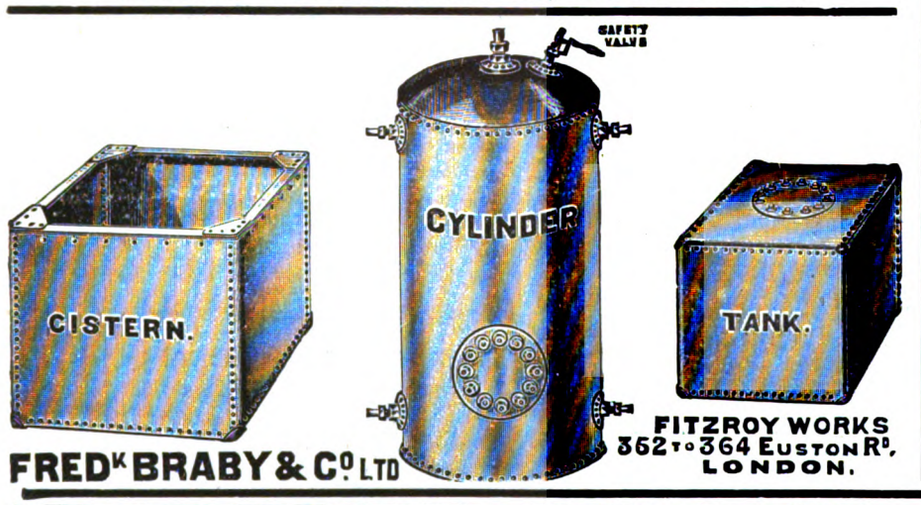
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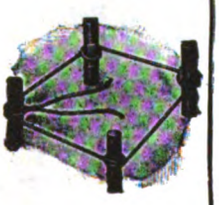
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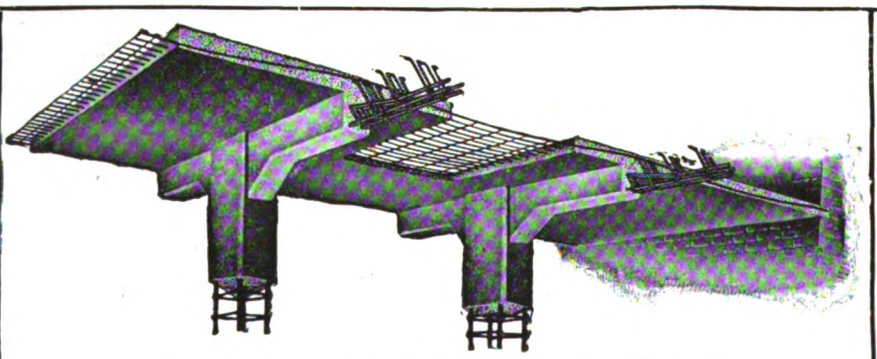
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THE ARCHITECT

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FORTHCOMING EVENTS.

Friday, June 9.

Royal Sanitary Institute: Conference on Sanitary Administration under War Conditions," at 10.30 A.M. (two days).

Monday, June 19.

Royal Institute of British Architects: Ordinary Meeting. Presentation of the Royal Gold Medal.

ARCHITECTURE AT THE ROYAL ACADEMY.—V.

AMONGST the competition designs which find a place on the walls of the Architectural Room is Mr. John J. Robson's "St. Paul's Bridge Competition: Perspective of Centre Arch." This is a good design of simple elements, arches of dignified plainness with rusticated voussoirs, piers well built up of ashlar masonry with rusticated projections, marred only by the architectural falsity of using a non-constructive rusticated sham arch as an enclosure to a segmental headed panel. The use of strictly constructive building forms merely as decorative features is the kind of architectural falsity dear to the amateur, the monumental mason, and the engineer, and belongs to the school of thought which regards architecture as a decorative accessory to building.

The competition for proposed offices for the Board of Trade has furnished this year's Academy with small perspective drawings by Messrs. Banister Fletcher & Sons, and by Mr. Arnold S. Tayler. In both of these the same motif of relieving the monotony of hundreds of office windows, many of them lighting small rooms, by the introduction of a central and two end pavilions, made up of more or less inconsequent architectural "features" and forced window grouping, is adopted. Messrs. Banister Fletcher & Sons' evolution of the idea is rather more successful than Mr. Tayler's. But at its best such a method of composition must be regarded rather as architectural dressing than as architecture.

Stepney Municipal Buildings as some architects would have wished them to be are represented in three versions. Messrs. Poynter & Wenyon show the principal elevation of their second premiated design, which was illustrated in "The Architect," and is notable for its rich portico of Greek Ionic columns in seven intercolumniations. The design by Messrs W. G. Wilson & J. W. G. Wilson has also been illustrated in our pages and, as our readers may remember, has a well-composed façade, with a central group of three openings separated by coupled Greek columns. The third design whose elevation appears is that of Mr. H. M. Fletcher. It is some compensation for these gentlemen, who were beaten in the competition by a superior plan, to know that their façade design is worthy of a place on the walls of the Royal Academy.

As a contrast to these partial failures we have Mr. J Theo. Halliday's first premiated design for Wilmslow Town Hall, a comparatively modest affair, but "a live donkey is better than a dead lion." Not that Mr. Halliday's design ranks in so low a category as the proverb might suggest, for within the limits of his opportunity he has scored a success, due largely to the arrangement of his pediment and portico of a giant order enclosing the principal entrance with the principal, or mayor's, window over it as the sole treatment of a canted angle. Had such a composition been placed in the centre of either of the adjacent façades it would have looked ridiculous, but as it is it holds its own, the premier place, without bullying.

We have, in a previous article, made mention of some educational establishments, including the Royal Naval College at Dartmouth, by Sir Aston Webb, R.A., & Sons, and the University College of South Wales, by Mr. W. D. Caröe. In the same category comes the "Midland Agricultural College," by Messrs. Everard, Son & Pick, an extensive range of buildings of which the three main blocks are shown in the perspective hung in the Architectural Room forming a group of a three-storey building in the centre, with a two-storey one on either side, connected by colonnaded covered ways. Treated in a simple Georgian manner, the design makes for dignity and effectiveness without ostentation.

King's College for Women, Kensington, is responsible for the three contributions to the Academy by Messrs. H. Percy Adams & Charles Holden. "Queen Mary's Hostel from the Quadrangle" has pinkish-coloured walls, presumably plaster, with red brick around the windows, and for its principal feature a circular projecting bay with Doric columns, French windows, and a low domed roof. The legitimate entrance on the same front is notable for its breadth, and on the drawing appears low and squat for want of height. "View in Quadrangle" is a detail of a stately window, which is an able piece of design, in which opportunity is taken of plain wall space above to develop a glorified urn treatment in stone. "The Refectory" is shown in an internal perspective, and is effectively treated; an aisle divided from nave by a Doric colonnade, a clerestory with more urns, possibly symbolical, and a coffered segmental ceiling.

Messrs. Lovegrove & Papworth's "Nursery Training School, Hampstead," is represented in two drawings; one, of the "street front," shows this to be possessed of well-massed picturesqueness combined with the reticence of small windows in broad wall spaces; the other drawing, a "view from garden," is also picturesque and dignified with its big openings treated with balconies.

Messrs. Gibbs, Flockton & Teather's "University of Sheffield: View from Future Quadrangle up into Existing Quadrangle," adopts Tudor detail, but by the height necessitated by many storeys misses the distinctive cachet of the older universities of Oxford and Cambridge.

Two large hospitals are hung in tier. "King's College Hospital, Denmark Hill." by Mr. William A. Pite; and "Leasowe Hospital for Crippled Children," by Mr. Thomas W. Haigh. The former is now well known by most Londoners as one of the finest of our modern hospitals, and in the bird's-eye view appears as an imposing group of buildings with considerable architectural character; the latter is notable for its adoption of the most advanced open-air treatment in hospital arrangement, a requirement which the architect has successfully met.

The drawing of "Main Entrance, Clapham Maternity Hospital," by Messrs. Alfred L. Hart & P. Leslie Waterhouse, is a detail in which the door is framed in stone by an Ionic order with broken segmental pediment and cartouche backed by a central pavilion in red brick and stone also treated to a pediment, but wisely triangular and unbroken.

We may conclude with a reference to the model showing the "Design for the Ceiling of the New Staircase of the British Museum," by Mr. R. Anning Bell,

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A.R.A., which we can hardly regard as a success, either intrinsically or as appropriate to the building which it is to decorate. Scattered pieces of design on the wall in the form of isolated canopies of varied and fantastic character enclose figures symbolical, more or less, of events in the life of King Edward VII. The ceiling also is spattered with similarly varied features, though some attempt has been made at their connection by the introduction of festoons between winged angels. The whole scheme is so utterly at variance with the character of the architecture, both in composition and in detail, that we sincerely hope it will never be realised Should it unfortunately be so, we feel convinced that a very near succeeding generation will wipe it all out as a ludicrous inconsistency.

NOTES AND COMMENTS.

IF the British Empire is to maintain its position in the industrial activity of the world, the work which is being done at the Royal College of Science needs to be extended and multiplied until South Kensington not only equals but surpasses Charlottenburg. Research lies at the bottom of all progress in industry, and research can be far more usefully carried out in a properly organised and adequately equipped State institution than by the private inventor. The effect of the war is impressing upon us the great fundamental principle that success for the nation is only in these days possible by State organisation and State assistance of the individual. The man in the street has grasped that principle. Parliament, always slow to receive impressions, and the Government, always slower still, must be made to comprehend the urgency of the principle, and show that comprehension by adequate support of the Royal College of Science, the National Physical Laboratory, and similar institutions of public utility. The building trade, in particular, needs the assistance of adequate research beyond the means of the Royal Institute of British Architects, which has already, even with its slender resources, carried out and is carrying out at the present moment investigations of high value to building construction.

Town-planning is rapidly becoming recognised throughout the world as a department of activity in which public or State participation must replace individual and organised effort, and in Perth, Western Australia, a public meeting has resolved on the following programme:—

Legislative.—(1) To promote a town planning Act for Western Australia. (2) To agitate for legislation to preserve the natural beauty spots of Western Australia. (3) To support legislation for improvement of street architecture. (4) For the abatement of all nuisances that may become inimical to public health and comfort. (5) To agitate for the efficient construction and maintenance of good roads throughout the State.

Vigilance.—(1) To obtain early information and report to the council upon proposed sub-divisions, traffic routes, or other public works existing and prospective. All proposals for buildings that would detrimentally affect the health, convenience, or beauty of towns and cities of Western Australia. (2) To report on the disfigurement of the city by sky-signs, posters, and hoarding advertisements, and suggest means of amelioration or removal. (3) To report on any proposed destruction of scenes of natural beauty. (4) To report on street planting and suggest adoption. (5) To report on existing parks, reserves, or playgrounds, their use and possible improvement.

Planning.—To prepare outline schemes of town planning for Western Australian cities and towns, and other places to enable the council to take action. (2) To report to the council on all proposals for buildings that will detrimentally affect the health, convenience, or beauty of Western Australian towns and cities. (3) To report on the placing of public buildings, statues, fountains, and other architectural works. (4) To report on the housing of the people, and especially re-housing where such is necessary. (5) To report on any additional parks, reserves, or playgrounds that are considered desirable in inhabited localities. (6) To suggest the reservation or acquisition of lands required for such purposes in the future.

Publicity.—(1) To provide a lantern and lantern slides of subjects suitable for lantern lectures. (2) To arrange for meetings, social meetings, lectures, and discussions on town planning and association objects in Western Australia. (3) To arrange for and maintain a press campaign. (4) To arrange for exhibitions. (5) To keep in touch with kindred societies throughout the world, and to obtain plans of improvements elsewhere. (6) To form a library.

Technical education in schools, polytechnics, and colleges has not up to the present in this country been sufficiently efficient to compensate for the modern decay of apprenticeship in industrial occupations, including amongst them the building trade, and it is therefore not surprising that a member of the Birmingham City Council, Mr. C. N. Clutterbuck, should be desirous of reviving the system under which in his youth he was adequately instructed in his craft. He has accordingly given notice that he will move the following resolution:—

"It is in the highest interests, particularly of Birmingham and of the Empire, that we use our utmost influence to revert in principle to the apprenticeship system as the most efficient and inexpensive means of placing Imperial commerce in a sound and progressive position, and to insist that boys learn their trades properly and thereby complete their industrial education, so that when the war is over we shall be in a position to supply the demands of the mother country, our colonies, and our Allies. That the Education Committee be requested to consider the whole subject and the advisability of preparing indentures containing a scale of good wages, in which the Education Committee, the parent, the scholar, and the employer are interested parties. That the Education Committee invite employers in every trade in the city to co-operate with them, and report their communications to this Council as soon as possible."

A contributor to the "Liverpool Courier" discusses in a column article the probability of high prices in the building trade, which he thinks will continue to rule after the war, and their effect on the provision of housing accommodation. He rightly makes an appeal for Free Trade in building, unhampered by the legislative and Governmental action which has been so potent a factor in producing the present shortage of dwellings for the people. As the writer well puts it, "the difficulties which now face private enterprise will equally confront the municipalities and the State. A most casual survey of past efforts on the part of these public authorities will show that their method of building houses for the people costs considerably more than does that of private enterprise. This, then, is a problem to be faced not only by the private builder, but by the State, the municipalities, the representatives of the working men—in fact, by the whole nation. The problem for the State will be whether it is better to provide the houses irrespective of the financial aspect, or whether it is better to make possible their supply in sufficient quantity to meet this shortage, and yet at a cost which will mean a minimum amount of waste and financial embarrassment for all concerned. For the State to successfully compete with private enterprise would entail the organisation of the building trade under the department of a Minister—as, for instance, the Government is now dealing with the munitions question. Surely some well-chosen legislation, which would remove from the path of the builder the present difficulties, would result in the resumption of the healthy competitive provision of dwellings which, while meeting the shortage, would not have the financial disadvantages that a monopoly of any sort must have. We hear much

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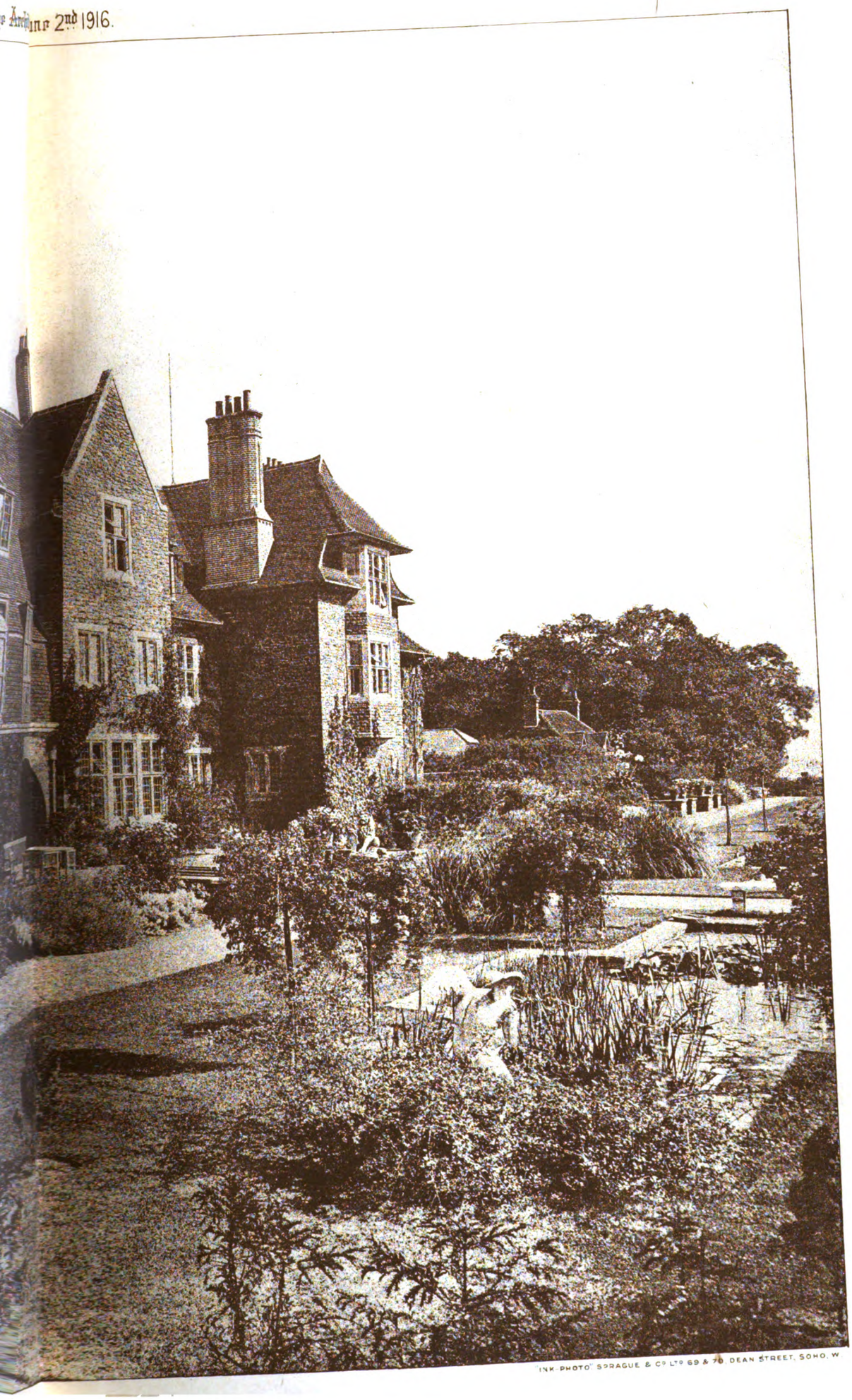


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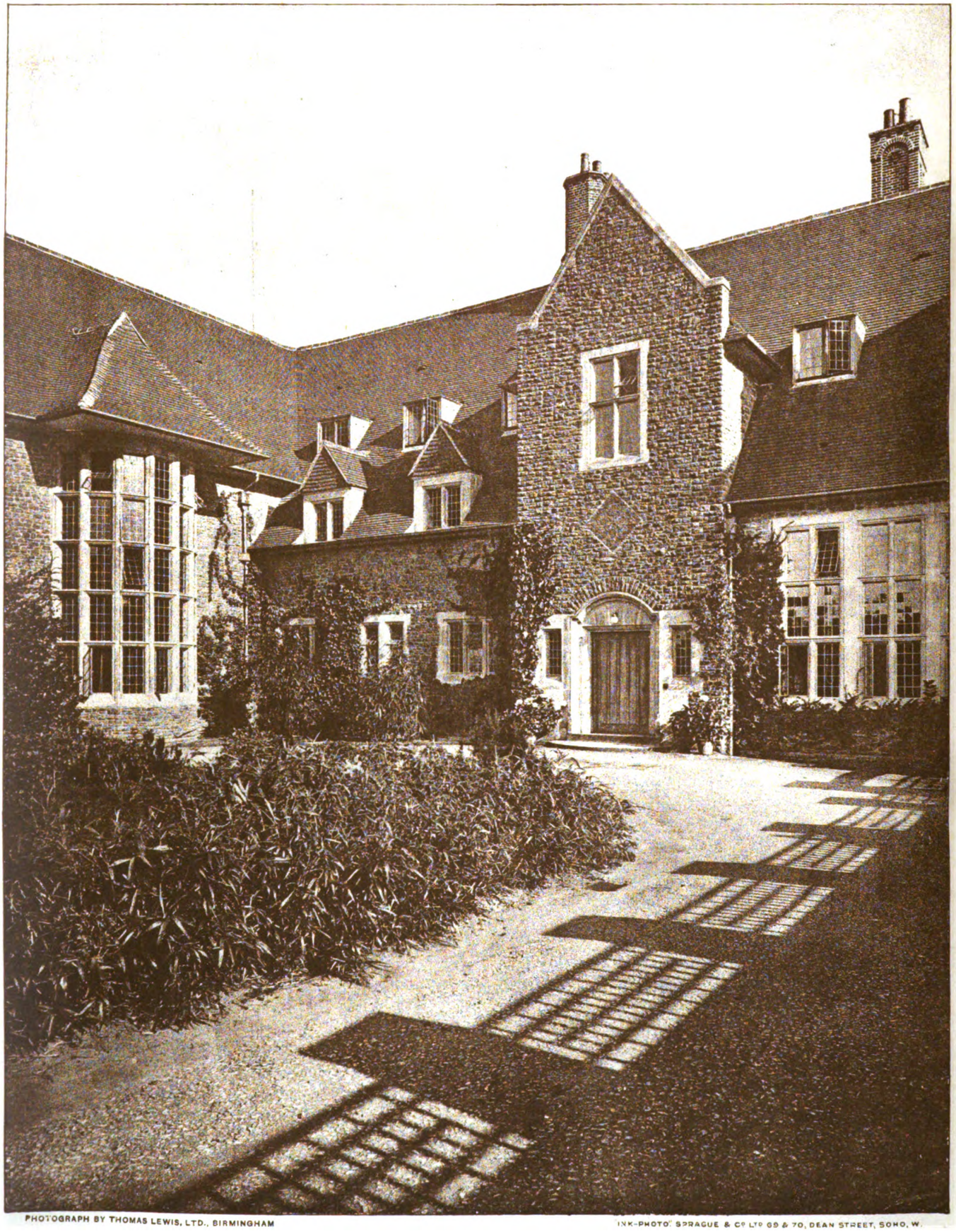
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about this country being founded very largely on the principles of freedom. It is the builders who to-day are asking for freedom, for with the minimum of artificial restriction and the maximum of freedom there must result a healthy readjustment of this national industry. The authorities could still supervise the building, as it is their duty to do, in order to prevent the erection of such houses as would interfere with the health and progress of the nation.

"Let us have Free Trade in building. But how can we, when such iniquities as, for example, the existing stamp duties prevail? Those who have transactions in land pay a much higher stamp duty than those having transactions in stocks, shares, &c. Previous to 1909 this tax was 10s. in the £100, which brought into the Government in one year £950,000. In 1909 this tax was doubled on all transactions over £500. The Free Trader would never have argued that this should have doubled the tax, and it did not. The total amount collected in 1914 was £1,154,000, an addition of only £200,000, and less than one-fifth of the previous amount. The only possible explanation of this result was that fewer transactions had taken place, the industry having been checked in its operations by the increased tax. Supposing the Government disposed of the whole of this tax, or at least reduced it to the same amount charged upon a Stock Exchange transaction. And why not? If no duty at all had been charged, the Government would have lost at the most approximately a million pounds—an amount which is negligible when compared with the figure they will have to pay through the nose to meet the demand for dwellings which they have thus artificially created. If, on the other hand, a smaller duty is charged, the number of transactions will show that the total amount collectable will not be far short of that at present received, while the houses will be more readily provided."

In the "Cornhill Magazine" Dr. Dearmer thus writes of his impressions on a visit to Ypres, which, however, we fear must be modified by the fact that the rain of shells on that unfortunate city is still continuing.

"There is no place like Ypres in the world—nothing so sad and nothing so beautiful. For all the squalid and sordid things are gone; there are no slums, no filthy hovels, no brawling or greasy sensuality, no crying in the streets: the city is very pure and quiet, and white under the sun, a dusty oasis of silence amid the drumming of the guns. Yet one realises how lovable a thing is humanity, with all its stains, and the common life of the tavern and the streets, and all the littleness of the average home, when one sees this beautiful loneliness, the chaste and awful grandeur of these ruins, softly crumbling under the sun, and the wonderful fantasy of this fretted architecture—proud remnants of famous halls, still lifting themselves high in the ancient moated city, which stands in the midst of the tumbled graveyard that we call to-day the Salient of Ypres. It will be re-built some day.

"The ancient houses are gone for the most part, never to return; but there is enough—at present—left of the Cloth Hall, and even of the Cathedral, to make its restoration no difficult matter. Restoration is an ugly word, but the corner of the great Cathedral tower cannot remain for ever as it is: either it will have to be pulled down, or else it must be rebuilt by the reproduction of its missing walls. And one hopes for a new era of architecture and of town planning in the building up of Belgium and Poland and Serbia. But I think that, when the war is over, Ypres will at first be kept a guarded sanctuary within its moated battlements for all the world to see. And all America will go to visit it, and all the neutral peoples; and they will realise what we fought for and why the fate of Christendom depended upon our conquering. France and Britain, too, will troop to see it—and Belgium; such troops of pilgrims as have never been seen before—multitudes among them wearing black."

At a recent meeting of the Newcastle Society of Antiquaries was read the following note by Mr. F. Gerald Simpson, on the discovery of two additional temporary Camps on the line of the Roman Wall. Both were stated to be on the Stanegate line, near Haltwhistle Burn. Mr. Simpson's paper described how, after locating the Camp close to the Stonerigg farm, on October 21, 1915, the tenant, Mr. Thomas Armstrong, concluded that another field work on his farm, hitherto unnoticed, was also of Roman date. On examination (April 11) the site was found to be undoubtedly Roman work. The Camp lies about half a mile E.N.E. of the farmhouse, and is nearly opposite Cockmount Hill farm, across the valley on the line of the Wall. It is the smallest Camp yet discovered in the Wall district, being a square of only about a hundred feet (measured to the centre line of the ramparts). There are two entrances. The rampart and ditch are, however, larger than those of the Camp near the farmhouse. The second site is very much larger, and appears to be of the same order as the large Camp of about eight acres, also located on October 21, 1915. It occupies the whole distance between Sunnyrigg and Fellend farm, but is much worn down by cultivation and grazing, except about the S.W. angle, and the whole outline will only be recovered by excavation. The farm known as Milestone House is near the middle of the Camp. The modern milestone quarry, to the north of Wades Road, has apparently destroyed the whole of the north rampart. About two hundred yards of the west rampart remain, with a probable entrance about the middle.

ILLUSTRATIONS.

"GREAT ROKE," WITLEY, SURREY.

LAST week we gave three exterior views of this house; we now follow them up by four photographs of the interior, and especially of the plasterwork executed from the designs of Messrs. Buckland & Haywood-Farmer by Mr. R. M. Catterson-Smith.

The entrance hall contains a stone corner fireplace, with oak doors, and walls panelled in deal. The ornamental plasterwork on ceiling takes the form of birds, with cornerpieces representing owls. An English oak staircase leads out from this room, giving access to the first-floor apartments.

The dining-room adjoining is panelled in oak up to full height, with doors of the same wood, and plain white-enamelled frieze. Occupying a central position is a Hopton wood fireplace. The furniture is in harmony with the general scheme of decoration, being of oak. In regard to the decorative treatment of the ceiling-beams, the predominant motif is the squirrel in naturalistic attitudes against a background of winding leaves in relief, and cocoa beans.

For the walls of the drawing-room a biscuit-colour distemper has been employed, with general decorations in white enamel. The wooden chimneypiece is finished in white enamel, and is set above the shelf with four neat Japanese figure-painted panels in keeping with the long side figure panels. There is a fire-on-the-hearth grate and brick interior. The ribs of the cross-beams are treated with a floral-patterned design interspersed with stud ornament; the ceiling being enriched with rectangular-shaped panels, delicately treated with a variety of ornament.

A fine scheme of plasterwork decoration has been carried out on the ceiling of the spacious music-room. Three rectangular bas-reliefs of a floral design, centred by pateræ, are noticeable between the beams. The pateræ show the different Signs of the Zodiac, as the twins, bull, ram, fishes, archer, scorpion, goat, water-bearer, and balance. The various musical instruments are beautifully represented in the scheme of ceiling decoration.

The landing ceiling, on the first floor, is also richly embellished with ornamental plasterwork, having motifs of birds—the stork and owl—set amidst decoratively treated representations of flowers and trees.

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"GREAT ROKE," WITLEY, SURREY. [Messrs. BUCKLAND & HAYWOOD-FARMER, Architects.

The windows and other dressings are of Doulting stone from the quarries of the Doulting Quarrying Company, Evercreech, Somerset.

The work was carried out from the designs and under the personal direction of Messrs. Buckland & Haywood-Farmer. Messrs. Henry Lovatt, Ltd., of Wolverhampton, were the general contractors. The sub-contractors were: Messrs. Henry Hope & Sons, Ltd., of Birmingham, who supplied the casements, leaded lights, art metal-work, door furniture, heating apparatus, rain-water heads, grates and mantels; Messrs. Doulton & Co., Ltd., of Lambeth, S.E., sanitary fittings; Messrs. Craven, Dunnill & Co., Ltd., wall tiles.

OXFORD COLLEGE SERIES.—NOS. 166 & 167.—ST. EDMUND'S HALL.

THIS, the only surviving Hall in Oxford, as distinguished from a regular College, was founded in the thirteenth century, but with the exception of the buttery and the kitchen, which were probably built in the reign of Edward IV., most of the buildings now existing were erected in the seventeenth century, to which some additions and alterations have been made in the early part of the nineteenth century. The haphazard and inconsequent arrangement of the various parts of the establishment particularly make for picturesque quaintness.

MAJOR H. PHILLIPS FLETCHER, F.R.I.B.A. (of Messrs. Banister Fletcher & Sons, architects, New Bridge Street, E.C.), has returned to England from the East in order to join the Royal Flying Corps. It will be remembered that Major Phillips was awarded the Croix de Guerre for aerial reconnaissance work in August 1915. That honour was won by him on two subsequent occasions—a unique distinction among British officers.

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—XXIII.

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

THE church of San Rocco (Venice) is situate midst a group of famous buildings, such as the church of Santa Maria Gloriosa dei Frari and the Archivio Centrale di Stato. The latter was founded in 1818-26 under the Austrian régime and contains many millions of documents; indeed, it is perhaps the finest and greatest collection of its kind in the world; it includes various State documents and papers, imperial papers of 883, letters of the doges from the tenth century and papal bulls of 1024, and also the famous Golden Book containing the names of the Nobili.

Further buildings in this group are the Scuola di San Rocco, and not far distant the remains of the one-time magnificent Scuola di San Giovanni Evangelista, founded in 1261, and originally the seat of the Confraternita dei Battisti. Most of the paintings which once adorned the interior of this edifice—productions of Bellini, Carpaccio, Titian, Tintoretto, and other masters—have perished, with the exception of those now exhibited in the Sala di Gentile Bellini (Room XV.) in the Accadémia di Belle Arti.

A splendid double staircase may be seen in the Scuola di San Giovanni by Moro Coducci, erected in 1498. The parts remaining of the outer court are by Pietro Lombardi, as are the buildings in the inner court, erected in 1481 and 1512 respectively.

Returning to the consideration of the church of San Rocco, one finds what is now practically an eighteenth century fabric. The façade is said to have been designed and added by B. Maccaruzzi in 1771, nearly fifty years

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after the entire church was rebuilt and modernised (1725), with the exception of the somewhat imposing and distinctive early-Renaissance side portal. The façade mentioned is the usual ugly baroque production.

The original church was built in 1490, and architecturally there is nothing to attract one's special attention within the existing edifice; but there are some fine pictures by Tintoretto, "The Annunciation," "The Pool of Bethesda," and "San Rocco in the Wilderness," and a "Bearing of the Cross," by Titian (generally ascribed to Giorgione), besides several other pictures by Tintoretto depicting incidents in the life of San Rocco, and works by other artists.

St. Rochus (St. Roch) or San Rocco was one of the great plague-saints of the city, and his body actually lies within this church. Turning to the Scuola di San Rocco, founded in 1478 by the House of the Fraternity of St. Rochus—the only fraternity, it is stated, that escaped dissolution in 1806—a fine pile is seen. This edifice was erected in 1524-60 by Sante Lombardi and Scarpagnino, from designs by Bartolomeo Buon of Bergamo. The magnificent and lofty early-Renaissance façade is a striking example of Venetian architecture, and this together with the lovely old staircase is worthy of very special attention and examination. The interior of this Scuola with its lofty and palatial halls, is very fine, and the pictures adorning the numerous walls are of great value and importance. Ruskin deals exhaustively in his "Stones of Venice" with its treasures as well as with those of the church of San Rocco.

Tintoretto, one of the greatest and the last of the great masters of Venice, was engaged, it is said, from 1560-88 upon the noble frescoes within this building, and his genius is perhaps more easily appreciated in the work covering this period of twenty-eight years than in all his other works. Tintoretto was about seventy years of age when he completed his scheme of decoration in the great upper hall and in the lesser lower hall.

He died some six years after the completion of his great work within this famous structure. There are also pictures by Titian, Giovanni, Dom Tiepolo, and others; but Tintoretto overshadows all the others.

His "Crucifixion" is claimed to be his masterpiece—a large work executed in 1565. Other examples by Tintoretto include an "Annunciation," a "Visitation," "Adoration of the Magi," "Flight into Egypt," "Slaughter of the Innocents," and among a large number of others (fifty-nine in all) the "Glorification of San Rocco amid the plague-stricken."

Wending one's way through many narrow dirty streets and over a number of canals, the church of San Giacomo dall' Orio is reached, an interesting old fabric, one of the most ancient churches in Venice, rebuilt in the thirteenth and sixteenth centuries and extensively restored in the present century. The quaint and original timber ceiling is still retained in the Gothic nave, and there is some very fine timber groining and elaborate wooden vaulting of the Renaissance period to be seen.

Proceeding further northwards the Grand Canal is crossed, close to the church of Santa Marcuola, erected by Massari in 1728-36, and striking almost due north through a straight narrow artery and crossing three parallel canals, the church of Madonna dell' Orto comes into view, situate upon a parallelogram-shaped island, at almost the northern extremity of the vast group of islands upon which the city stands, and overlooking the broad lagoon, with the islands of Murano, Burano, and Torcello in the distant view.

This church, also called San Cristoforo Martire, has a magnificent Gothic façade, florid in treatment, erected in 1460, and a quaint campanile in the early-Renaissance style. Among the many fine pictures within is "St. John the Baptist with SS. Peter, Mark, Jerome, and Paul" grouped under a Renaissance loggia; an early work dated 1489 by Cima da Conegliano, and a number of fine canvases by that colossal and indefatigable genius Tintoretto.

Returning to the south-eastwards the church of Santa Caterina is the next religious edifice, within a few minutes walk of the Madonna dell' Orto, famous mainly because of the masterpiece "Marriage of St. Catherine" by Paolo Veronese, a magnificent work in perfect state of preservation.

Due eastwards rises the fine church of Santa Maria dei Gesuiti, generally called I Gesuiti, rebuilt in the eighteenth century in the baroque style by Domenico Rossi, and with an exceedingly ornate façade by Giovanni Battista Fattoretto, certainly one of the very few imposing structures in this style. The decoration of the interior is sumptuous like that of the façade; marble inlaid with verde antico being profusely used but with striking and agreeable effect. Works of Titian and Tintoretto again adorn this beautiful interior.

Immediately opposite in a north-easterly direction from the Fondamente Nuove lies the island of San Michele, about a quarter of a mile distant in the silent waters of the



THE CAMPANILE OF THE DUOMO, TORCELLO.

lagoon from the main group of islands. This little island was formerly the site of a Camaldulensian convent, the garden of which and a small contiguous island has since 1813 served as a cemetery.

The church of San Michele stands also upon this detached island, next to the cloisters of the ancient convent. It is said to be the oldest Renaissance religious edifice in Venice, with the exception of San Giobbe, begun in 1451 and finished in 1471 by Gambello and Pietro Lombardi, and the church of San Zaccaria erected in 1458-1515 by Gambello and Moro Coducci. Both are fine examples of this period, the latter being in style in the transition between the Gothic and Renaissance.

The old basilica of San Michele was built in 1469-78 by Moro Coducci, and has many features of special interest.

The greatest joys, as is well known, are frequently closely allied to feelings of great regret; and as it is true that the former are experienced when Venice is visited for the first time, it is equally true that the latter cannot

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be escaped when one has to bid adieu to this city of dreamy and enchanted waterways.

The time has arrived when Venice must be left, with the possibility that very many years may elapse before one is again privileged to stand within its ancient walls. And with it must be left the most beautiful examples of domestic and civil architecture of the Gothic period in the whole of Italy, examples largely derived from the elegant Byzantine, Moorish-Arabesque or Saracenic, with all that richness and warmth of treatment peculiar to those old-world styles. There appears to pervade the very lines of this Italian Gothic that distinct Oriental or Eastern feeling so captivating and entrancing, and so eminently fitting in the monuments of this city of the sea.

It is during the last hours, and even when being rapidly carried upon the homeward journey, that the greatness and grandeur of this wonderful city appears to loom more largely and more realistically in one's mental vision.

It may be, although one sincerely hopes not, that some of these masterpieces of the world of architecture and art are destined to fall victims to the horrible ravages of the world-conflict at the present time reducing to disordered heaps of dust some of the noble monuments not so very far distant from the homes of Sanmichele, Palladio and Sansovino, Titian and Veronese—a conflict the like of which has been unknown in the history of the world, which has carried away in its ghastly train more brilliant men and strong, healthy young lives in almost any single week during which these notes have been penned than did the greatest and most deadly plague that ever darkened the shores of the city and islands of the Venetian lagoon.

In pondering over such matters, one wonders whether, after all, the peoples of the Middle Ages who, instead of improving the drainage and sanitary conditions of their towns and cities after a visitation of the plague, looked upon the havoc caused in the ranks of their citizens as the work of some evil genius or as a Divine punishment, and forthwith erected a church to some favourite or influential plague-saint, were not perhaps much more civilised in the true sense of the term than the peoples of this enlightened twentieth century.

Search the records of the wars of old and one looks in vain for incidents parallel or comparable with those acts of refined, calculated barbarism perpetrated during the progress of the present-day gigantic struggle.

Treachery of the most debased character viewed as the paragon of scientific attainment, and wholesale slaughter of the flower of manhood, and the massacre of helpless women and children as the height of Kultur, the deliberate destruction of the architectural and artistic treasures of mankind forming the crowning monuments in the hideous trail of blood, a fitting reference to the tribe who in the far-off days of 453 destroyed Padua, and later in 568 drove the remnants of the Veneti from the mainland to the islands of the lagoons.

Knowledge of the awful happenings of the present time appears to add lustre to the effects of the short holiday spent in this wonderful city and neighbourhood, and to impress ineffaceably and with extraordinary power the memory of its lovely Byzantine cathedral of St. Mark and those glorious palazzi of the same period, together with those examples of the finest architectural period of development of Venice (the Renaissance), when Antonio Bergno, Scarpagnino, Sanmichele, Sansovino, Palladio, Scamozzi, Longhena, and others carried out their work. Such a memory will continue to live for the remaining years of one's existence, an indissoluble dream of artistic happiness.

Before drawing to a close the account of this little holiday, it is essential some reference should be made to a series of very enjoyable excursions, easily undertaken and of enormous interest to the architectural student, which should certainly not be neglected before turning homewards. No better idea can be obtained of the geographical situation which has so largely affected the political history of the city of Venice than some of the many pleasant excursions to the islands of the lagoons.

The vast extent of the water area, separated by the Lidi from the Adriatic, is more easily grasped and appreciated, and the peculiarities of the basking mud-banks periodically submerged, and the narrow artificial and natural channels intersecting the same, together with the wonderful narrow Lidi, are viewed much more intelligently upon such excursions to the outlying islands in this great silent water area.

In order properly to understand the architecture of Venice it is necessary to make a pilgrimage to Torcello, in the Venetian lagoon, by lagoon steamer from the Riva degli Schiavoni, or preferably by gondola, providing on the way a much finer view of the lagoons, and allowing the stay at Torcello without that uncomfortable feeling of being tied to some fixed time for the return journey.



THE STABILIMENTO BAGNI EXCELSIOR, LIDO.

It is said that precedence must be granted to the delightful old basilican cathedral of Torcello, over even the cathedral of St. Mark. It will be remembered that the peoples of Altinum and elsewhere in northern Italy took refuge on the islands in the lagoons when Attila and his Huns invaded the mainland, and in this way Torcello was built and became the mother-city of Venice and the parent-isle of the new State. The seat of government of the earliest of the doges, Paulucius Anafestus, who died in 716, was at Torcello.

All that remains of this earliest city of the lagoons, from which sprang the mighty Queen of the Sea, is now little more than the Duomo, the Byzantine church of Sta. Fosca, a couple of small buildings, and a few ancient cottages. A precious group to the architect, but forlorn and decayed and wretched in their isolation.

The old, simple, and cold Duomo, the former cathedral of Santa Maria Assunta, essentially Romanesque in character and lacking all those peculiar Oriental features

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so strongly pronounced in other Venetian churches, rises close to the landing-stage, seeming to appeal to the student in all its neglected and silent grandeur, framed in a setting of the most gorgeous fruit gardens and vineyards, and calling for admiration as the early founder of the architectural monuments of Venice. It is recorded that the original cathedral was a columnar basilica in the early-Christian style, founded in the seventh century (about 641), and some two hundred and twenty years after (about 864), being in a ruinous state, was extensively restored, or practically rebuilt, and again in 1008 almost rebuilt by the son of the famous doge, Pietro Orseolo, the Bishop Orseolo. Of the early buildings little remains to-day excepting perhaps some of the masonry at the eastern end of the structure. To the second period (864) seem to belong the two side apses and most of the external walls, and the existing nave to the third period (1008). The length of the church internally is about 125 feet, and its width 71 feet. The interior is full of interest, and the mosaics of the apse and western wall are thought to be among the finest examples of Venetian mosaics. The large beams passing across the nave just over the capitals of the round columns, and the similar beams running lengthwise at about the same level from the springing of the semi-circular arches, are quaint and strike one as uncouth at first sight; but after a while the plain plastered surfaces of the roof level appear to complete that wonderful sense of simplicity so striking in this desolate church.

The bishop's throne, surrounded by six ranges of seats for his presbytery, in the apse, is one of the most interesting features. The wide semicircle formed by the apse has the seats ranged round similar to an ancient amphitheatre, and the episcopal throne is raised upon a high staircase in the centre. The entire arrangement gives a better idea of the method in which an apse was originally disposed than is perhaps to be found in any other church of its age or even of an earlier date.

Behind the church rises the campanile, a typical Romanesque structure, 180 feet in height, from the top of which a magnificent view is obtained of the lagoons, the islands, and the Adriatic.

The remains of the ancient baptistery, internally octagonal in shape, erected in 1008, adjoin the cathedral, externally a square block measuring about 37 feet each way.

The beautiful little church of Sta. Fosca completes what may be described as an extremely interesting group of buildings of unrivalled architectural value.

(To be concluded.)

THE IMPERIAL COLLEGE OF SCIENCE.

IT is several years since we paid a visit, under the ægis of the London Architectural Association, to the building works then in progress upon the Royal College of Science. The structure had at the time reached an interesting stage of development—sufficiently interesting, in fact, to enable us to appreciate Sir Aston Webb's cultured adaptability as architect to the needs of the moment. We were conducted throughout the building then as thoroughly as on our more recent visit of the 31st ultimo. But with this difference: that whereas Sir Aston could tell us that this, that, and the other apartment was intended for such or such a purpose, our professional guides of to-day were able to show us that the purposes were severally realised, so far as equipment and staff are concerned.

Mais toujours la guerre! The exigencies of the military organisation have so encroached upon the activities of the College that, whereas (as we are told) in normal times the number of students (many of them post-graduate) in the College is 1,000, at present there are perhaps only 150 to 200 engaged there.

Our visit was the direct outcome of a recent meeting of the Circle of Scientific, Technical, and Trade Journalists (Institute of Journalists), when the Right Hon. A. Dyke Acland was one of our visitors to join in the discussion upon the subject of the evening. Mr. Acland was courteous enough to issue an invitation to the Circle to visit the Imperial College, so as to obtain some insight into what is being done in the way of scientific research upon an industrial basis.

Let us at once confess to a twofold sense of humiliation—one personal, the other national. To wander through these laboratories, so well stocked with modern appliances and machinery, is to experience a sense of personal shrinkage almost physical in its painfulness and complete mentality; what grasshoppers we become in our own eyes! But equally painful is the borne-in knowledge that England, mistress of a quarter of the globe and of one-fifth of the world's population—England, whose historical records make such noble reading from the days of King Alfred onward to the advent of Victoria—England has sunk into a lethargic slumber, and allowed a younger and a pushing neighbour to forge ahead and to show herself such an adept in following paths which lead direct to commercial prosperity, commercial success. Germany's peaceful penetration was like to be our undoing, but the War intervening (let us hope, not too late), perchance we shall shake off our dangerous lethargy and show that we will still not only maintain the beneficent sovereignty of the seas, but also be supreme in everything that will retain for us our hegemony in commerce. To this end, the memorial presented from the professors to Lord Crewe (chairman of the Governors of the College) should act as an inspiration.

Since the bolt fell from the blue, twenty-two months ago, the Imperial College has devoted itself to much invaluable research work on behalf of the Government; but upon these activities we shall be well advised not to descant here. From the cursory inspection which the time at our disposal permitted, it is obvious to us that what is required is a generous State support of this College. If in place of, or, we would prefer to think, in addition to, a visit from a body of journalists, the House of Commons would attend and see what are the potentialities of this institution we doubt not that public opinion, as there crystallised, would demand of the Government a contribution not of £70,000, but of £700,000 per annum, to develop more adequately the work which awaits the necessary financial assistance.

Mr. Dyke Acland properly pointed out to us that, so far as normal research is concerned, the position of the College is rather to be regarded from the standpoint of the potentialities for the future than of actual accomplishment hitherto; and in his remarks in response to a vote of thanks moved by Mr. Leon Gaster, Mr. Acland welcomed the signs of growing interest in the claims of scientific research from the industrial standpoint.

As was pointed out by Professor Farmer (Director of the Biological Laboratories), in such an inspection as we held we did not even skim the cream, let alone tasting. We certainly sensed (not too pleasantly for the olfactory organs) the purification of pyridine.

We cannot adequately express our gratitude to Mr. Acland and his staff of professors for their courteous and hospitable attention to us.

THOUGHTS ON ART.*

By SIR ERNEST GEORGE, A.R.A.

IT is good to look on these walls and see so great a labour of love; for by the name of your Society the work is such a labour. All good work should have the same inspiration, whether there is or is not the necessity to live by the result.

Those endowed with the power of expression, in form or in colour, are greatly to be envied. To record an interpretation of Nature, helping others to see her charms, is a gracious and useful act.

Each inspired study is a human record. And when

* A short address delivered to the Royal Amateur Art Society in connection with their exhibition at 25 Park Lane, W.

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such documents are gathered together in order to render aid, as on this occasion, to a good cause, the work has a twofold value.

As a humble though enthusiastic sketcher, I may say that the periods called holidays, which I have given to painting in the street, the church, or the market-place, in the midst of the people, in the beauty of light and colour, with ever-varying scenes, and with a good comrade, have been the golden days of my life.

This personal enjoyment of the artist may be selfish or self-centred; but if his work left nothing tangible, and was like the song that has been sung, the occupation would be its own sufficient reward.

At present, alas! the artist finds Italy, France, and his accustomed hunting grounds closed to him. And if he seeks solace among the home pastures, he is threatened by the village constable or the vigilant coastguard.

I have just now spoken of the pleasure of work. Among painters the amateur has the largest share of the pleasure. He can seize on that which appeals to him, rendering the characteristics of his subject, without going into its less obvious features. He has no responsibility to buyers or dealers like an architect to a client. With the amateur painting is probably one of various interests and occupations; and he would be wise generally to limit his ambitions, choosing simplicity of subject and a straightforward and direct method of treatment.

The painter whose life is given seriously to his work must grapple with problems that he cannot always master, and he is often conscious of failure to fully depict his ideal.

With each effort the artist's desire has probably been to attain something higher than the completed work by which we judge him.

With "hope that springs eternal" the next effort is made in the belief that, finding his soul, he may yet be able to express that which is in him.

We should all like to be judged by our aims rather than by our realised performance.

I may be regarded as old-fashioned if I insist on the first importance of drawing. There is often the temptation to break out in colour, and to talk of "tone values," before the elementary knowledge of drawing is acquired. That knowledge mastered, all future work is simplified, whether in colour, by the etching needle, or by any other medium. It is as an Architect I feel this most strongly, for no beauty of colour will justify a building that seems tottering and without construction, or the presentment of human form without indication of bone and muscle. Imagination and sentiment will be wasted on a work that lacks the fundamental qualities.

Together with drawing, there is the study of composition; learning what should be included in a picture and what should be eliminated as unprofitable.

There is further for consideration the relative proportions of light and shade. This and more before entering upon the infinite combinations, the subtle beauties and the glory of colour.

Strangely the Realms of Art have always been subject to Fashions, Phases, and Schools; contemporary artists influencing one another and the public.

A work of distinction from the hands of a genius, which has excited interest, will be followed by lesser men. There is, however, the danger of repeating the peculiarities and foibles of the artist without understanding the spirit that has moved him.

The search for novelty for its own sake need hardly be commented on, yet we know that pretentious nonsense too often obtains a hearing.

Be it "Cubist" or other folly, it finds its votaries.

The attempt to bring in a "New Art" is too often made by those who have not learned the grammar of the old; who think to avoid serious study and the drudgery of taking pains.

In Architecture we sometimes meet the attempt to shirk the careful study of what has been done, substituting the preposterous for the reasonable methods.

Knowledge and judgment must be acquired before departures can be made successfully from the accepted ways. Imagination may then have full play.

While speaking of the vagaries of students, I would add that instances of vanity and self-sufficiency are exceptional. I can speak only of the Architects; and I am glad to know that the present generation are enjoying a sounder training than did their forerunners. Among them are earnest and able men from whom we should have work on a higher level than that we leave to them.

These men have all gone to the wars; they are under training of another kind. The physical and mental development of the man may give vigour and freshness to the artist when the Arts of Peace are resumed. But many on whom our hopes were placed will not be with us.

We have spoken of sketching; we know that good sketches give very real pleasure in their fresh simplicity; they convey very directly what the artist has felt and has to tell; much work might well be kept in its early condition.

For a serious and permanent work, on a large canvas, a sketchy treatment, as sometimes seen, is inadmissible. To stop just where the difficulties begin, and where there is a call upon the artist's knowledge and power, is not playing the game.

Asking a painter what he was engaged upon, he said: "I am always doing one of two things: I am either beginning a good picture or finishing a bad one."

All ways and means are good in which a true artist finds ready expression; while no amount of cleverness will justify the work of one who, with much acquired skill, has no message for us.

It seems presumptuous for an architect to offer advice to painters, many of them accomplished; yet the same laws apply to the work of the Painter, the Sculptor, and the Architect.

The mind and the eye must be trained to a fine perception of those qualities that distinguish great work from that which is common; the knowledge of when to be broad and massive, and when delicacy and refinement are called for.

ABERDEEN ARCHITECTURAL ASSOCIATION.

THE annual meeting of the Aberdeen Architectural Association was held in the Northern Arts Club on the 2nd inst., Mr. W. J. Devlin presiding.

The Chairman said that owing to the exigencies of the war and the absence on service of younger members, the work of the Association during the past year had been very much restricted. Nevertheless, looking back, they who were left to carry on might congratulate themselves that at least they had made the most of their opportunity, and that the interest in the Association had been maintained, and the meetings, though fewer, had been very successful and well attended. It was most regrettable that early in the session the lecture by Mr. F. C. Eeles, Rhind lecturer for 1914-15, had to be abandoned owing to circumstances arising out of the war. They hoped they would have the pleasure of hearing him next session. Five members had joined the Forces since their last annual meeting. He was both sorry and proud to say that since then they had lost Lieutenants W. J. Watt and G. Milne, John G. W. Murray, 4th Gordons, and J. W. Ingram, Canadian Expeditionary Force. They had also to deplore the death of Mr. Henry F. David. To the families and friends the members of the Association extended their sympathy, and also to their esteemed member Dr. A. Marshall Mackenzie, on the death of his son, Gilbert Mackenzie, an architect and gallant soldier.

The following office-bearers were re-elected:—Hon. President, Mr. Harbourne McLennan; President, Mr. W. J. Devlin; Vice-President, Mr. R. G. Wilson, jun.; Secretary, Mr. R. W. Gibson; Treasurer, Mr. J. H. Allan.

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Messrs. Alexander Cruickshank and James B. Nicol were re-elected members of the committee, and the following new members were elected:—Miss Wardlaw Burnet, and Messrs. William Banbury, James Blake, and James Lowson.

The financial statement showed that the Association had a balance of £11 to carry forward to next year.

THE SURVEYORS' INSTITUTION.

THE Second Annual Report of the Council issued during the great European War follows the first in emphasising the effect of the war in almost every department of the Institution administration. The statistics of membership again show a considerable fall in every class except that of Colonial Fellows, but of that fall more than half is attributable to a decrease of 119 in the number of students, the supply of whom is practically shut off by the calls of military service.

The same might be said of professional associates, who number sixty-nine less than twelve months ago. Although a considerable number of men have passed the Intermediate Examination, the war has prevented so many of them from sitting for the final that the source from which the balloting list is mainly recruited in normal times has, therefore, now practically been closed. In this connection it is interesting to note that the balloting list of October 1913, contained the names of thirty candidates for the Fellowship and Colonial Fellowship, one for the Associateship, and 452 for the Professional Associateship; while the numbers in October 1915 were respectively 30, 0, and 55.

The class of probationers recently formed from among those who, having passed the Intermediate Examination, wish to connect themselves with the Institution until they have passed the Final and come up for election, show a slight increase of from forty-nine a year ago to sixty-two at the present time.

The following tables give the numbers up to date:—

	Honorary Members.	Professional Fellows.	Colonial Fellows.	Associates.	Associates.	Probationers.	Students.	Total.
May, 1914...	24	2,000	71	2,967	57	—	363	5,482
May, 1915...	24	2,048	72	2,860	53	49	328	5,434
May, 1916...	23	2,013	76	2,791	51	63	209	5,226
	−1	−35*	+4	−69†	−2	+14	−119	−208

* New Fellows ... 55; Resigned or died ... 90; −35

† New Professional Associates ... 55; Transferred, resigned, or died ... 124; −69

Finance.—As was inevitable in the circumstances, the Statement of Account shows that considerable changes have taken place during the year, but the Council feel that members are to be congratulated upon the manner in which the Institution finances have stood the strain of the war. In spite of the great depletion of income due to the fact that members on naval or military service are not asked to continue their subscriptions during their absence from professional life, it has been found possible again to carry on the year's work without making any call upon capital, the decrease in revenue being met to a great extent by economy in expenditure.

The decline in the receipts from annual subscriptions amounted to £1,610, and from entrance fees to £140. It has been, however, in connection with the examinations that the most marked loss has been manifested. During the few years prior to the war the large number of candidates presenting themselves for examination led to balances in examination fees over expenditure becoming available for the increase of the Scholarship Endowment Fund. These dropped to £95 in 1914, the first year of the war, while for 1915 the Examination Account showed a deficit of £600, in spite of a reduction by a similar sum of expenditure under this head.

Rates and taxes have increased by £190, while the necessity of insuring the Institution buildings and their contents against damage by hostile aircraft has provided an additional war expense.

By suspending the offer of new scholarships during the period of the war, a subject dealt with later on in this Report, by the discontinuance for the time being of the Country Meeting and the Annual Dinner and Reception, together with the consequent reduction in the cost of printing and postage, and by other retrenchments, distributed under almost every heading, a total decrease of expenditure compared with 1914, amounting to about £2,200, has been effected.

In these circumstances the Council have been able to respond to the national call by taking up £1,000 of the Second War Loan. They also converted the Institution holdings in earlier Government securities into the 4½ per cent. War Loan stock, and, an extra dividend accruing thereby during the year of account, the return under this heading shows a proportional increase of £60. The actual increase in dividend which will result from the conversion of all the Institution Government securities will amount to about £40 per annum.

The following table gives a précis of the accounts for the year 1915:—

RECEIPTS.	£ s. d.	PAYMENTS.	£ s. d.
Revenue Balance—January 1st, 1915 ...	1,100 8 1	Total Payments out of Revenue (Current Expenses)	9,881 8 5
Total Receipts on Revenue	11,864 0 0	Purchase of £1,000 War Loan 4½% Stock ...	994 13 0
Capital Account	578 11 4	Examinations Account ...	611 6 11
		Furniture	11 10 3
		Cash at Bankers and on Current Account... ...	1,697 10 10
		Examinations Suspense A/c	346 10 0
	£13,542 19 5		£13,542 19 5

The Examinations.—The calls of the war were very evident in the number of candidates who presented themselves for the Preliminary and Professional Examinations during the current year. There were forty-four candidates only for the Preliminary Examination, the smallest number since 1883, the third year in which the examination was held; while we have to go back to 1892 to find a lower total than 139, the number who this year sat for the Professional Examinations. Members, however, would not wish it otherwise. The paucity of candidates merely provides further evidence as to the manner in which the coming generation of surveyors is answering to their country's call.

In the last Annual Report particulars were given of the arrangements which the Council were making to reduce, so far as possible, the disadvantage in which intending candidates might be placed by the interruption of their studies. The concessions there detailed still remain good.

Scholarships at the Universities.—The Council have decided to suspend during the period of the war the offer of Institution scholarships tenable at the Universities. They have been influenced in arriving at this decision by the fact that the call to military service not only had the effect of reducing the number of candidates desirous of competing, but, what was perhaps more important, in the absence on service of the best, of lowering the average standard of those who applied. This was perhaps to be expected, but in the circumstances the Council considered that the objects for which the scholarships were established would not be attained during the present interruption of university studies.

The Publications.—In order to meet war conditions it was, early in the new session, decided to hold the ordinary general meetings once a month, instead of fortnightly as usual, and at 5 P.M. instead of 8 P.M. Although naturally the attendance is comparatively small compared with pre-war times, it has not been unsatisfactory, while the standard of the discussions, which have followed the reading of the papers, has been good. The Council feel, therefore, that the change has justified itself, though a return to the evening meetings is contemplated as soon as the conditions have become normal.

During the period of the war the Professional Notes will be issued every four months instead of quarterly. The Notes and Queries will continue to be dealt with expeditiously in the usual manner, and the Council feel

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therefore that this war economy may be adopted with no serious inconvenience to members.

The Library and the Forestry Museum.—Expenditure on the Library and the Forestry Museum has been reduced to a minimum. The former, however, is kept up to date by the purchase of new works of special interest to the profession, and new editions of previous issues as they are published.

In connection with the English Forestry Association an interesting exhibition of home-grown timber, and the uses to which it is being put to meet naval and military requirements during the war, was opened in the Lecture Hall of the Institution by the Rt. Hon. the Earl of Selborne, K.G., G.C.M.G. (honorary member), President of the Board of Agriculture and Fisheries, on December 13, when Mr. Duchesne read his paper. The exhibits were partly from the Forestry Museum and partly lent by the Minister of Munitions. The latter have since been presented to the Institution, and may be seen in the Museum.

The Standing Committees.—The Council have little of special interest to announce with regard to the work of the majority of the committees.

The Parliamentary Bills and General Purposes Committee, however, have had a considerable amount of work thrown upon them in connection with the war, such as the Increase of Rent and Mortgage Interest (War Restrictions) Bill, the proposals in connection with which they considered in their earliest stages, reporting thereon through the Council to the President of the Local Government Board. While that measure has been subjected to a considerable amount of criticism as economically unsound, it should not be overlooked that it was passed to meet certain abnormal conditions which had arisen; and that Mr. Long, in introducing the Bill, specially disclaimed any suggestion that the proposals were logical, or that they could be defended on economic grounds.

They have also been engaged in considering the appointment of arbitrators under the Housing Acts; the effect of Lord Derby's recruiting scheme and the Military Service Act on the profession; the manner in which the depletion of office staffs could best be made good; and the effect of the excess profits duty on surveyors' earnings.

The European War.—Twelve months ago the number of those connected with the Institution who had joined His Majesty's Forces was 1,063, of whom twenty-nine had given their lives in their country's cause. Those figures must now be increased to 1,757 and sixty respectively. Of the former figure 197 are Fellows, 1,002 Professional Associates, seven Associates, ten Colonial Fellows, and 481 probationers, students, and examination candidates. Eight members of the Institution staff are also serving.

In the early part of the year many members were helped to join technical branches of the Army, either with commissions or through the ranks, more particularly the lines of communications, mining, and navvy companies of the Royal Engineers, the heavy artillery, and the sanitary companies of the R.A.M.C.; but since the Derby Scheme and the Military Service Act came into operation, the military authorities seem to have found a difficulty in giving the time necessary to place men in units for which their technical qualifications would seem specially to fit them.

The Institution was represented at the Conference called by Mr. Cecil Harmsworth, Chairman of the Home Office Committee, on behalf of Lord Derby, to consider how the shortage of men engaged in professional or industrial undertakings, occasioned by the recruiting schemes then coming into force, could be made good; and to what extent individuals might be looked upon as indispensable to any particular business. The Council laid their reasoned views before the Committee, which doubtless, in conjunction with those of other associations, resulted in the inclusion of Section 2 (1) (*b*) of the Military Service Act.

Miscellaneous.—The Council have naturally been keenly interested in the widely distributed retrenchments which have taken place in the surveyors' staff of the Valuation Office of the Board of Inland Revenue. They at once recognised that the dismissal of large numbers of men at a time when existing circumstances made it unlikely that any considerable number could be absorbed in private practice was likely to give rise to great hardship, particularly among those who had contracted responsibilities in the belief that their position was practically secure. While refraining from offering any opinion on the policy of retrenchment, the Council have impressed upon the Government the view that in such a matter they should occupy the position of the model employer, and that, whatever the strict legal situation with regard to the displaced officials may be, a moral obligation attaches to that position which should constrain the Government to see that men who have been in their employ, and who are acknowledged to have carried out their duties loyally and well, are not permitted to suffer if other openings in the public service, either technical or clerical, present themselves, which they are qualified to fill.

A number of members having been required to make returns in connection with claims for excess profits duty, the Council thought it advisable to take the highest legal advice as to whether surveyors were not exempted under Section 39 (*c*) of the Finance No. 2 Act, 1915. They therefore consulted Sir Robert Finlay, who advised very definitely that members of the Institution practising the ordinary profession of a surveyor are not engaged in a trade or business to which Part III. of the Act dealing with excess profits duty applies. An interview subsequently took place between representatives of the Council and the Chairman of the Inland Revenue Commission, as a result of which Sir Edmund Nott-Bower afterwards wrote to say that his department felt bound to maintain the opinion that the negotiation of sales, notwithstanding the element of personal qualification of the surveyor engaged, normally fell within the scope of the duty, and that the same applied to the collection of rents although combined with a measure of estate management; his department would, however, always be ready to consider specially cases in which the various classes of a surveyor's business transactions were not separated, and the bulk of them fell in a class which all agree to be excepted from the operation of the duty. It is hoped that most members of the Institution will be found to come within the cases referred to in the latter part of the letter.

A circular was issued warning members that the War Risks Insurance Committee examine very closely claims for compensation in respect of damage to property by hostile aircraft under the Government scheme, and do not accept liability for professional fees in respect of reinstatement, or for the cost of renewing boundary walls, paving, &c., unless specially mentioned in the policy. In the circumstances members were advised to see that the nature of the property, and the risks which it was desired to cover, were precisely defined; and it was pointed out that where the insurances were effected by reference to existing fire policies, this might be done by endorsement thereon.

In view of the possibility of unemployment arising at the termination of the war, and the necessity of taking steps beforehand to meet it, the Council have set up a committee divided into two parts, representing respectively town and country conditions, with the following reference: To consider the problems likely to arise at the termination of the war, more particularly in connection with possible unemployment on the disbandment of the Army and munition workers; and dealing with the questions involved in the light of the special knowledge possessed by surveyors as distinct from other professional men or from representatives of trade and industry, to suggest preventive or curative schemes. These committees are now sitting, and it is hoped that valuable results may be obtained from their deliberations.

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Among other subjects dealt with during the year have been town planning, in connection with which a circular was sent out jointly with the Institution of Municipal and County Engineers, urging surveyors representing local authorities and those in private practice to co-operate in order to secure agreement in the earliest stages of the preparation of town planning schemes; and in connection with which, also, the Council have joined with the Royal Institute of British Architects to impress upon the Government and other authorities the urgent need which exists for defining without delay the lines of main arterial roads.

The Council also have had under consideration the appointment of arbitrators under the Housing Acts, and have laid before the Local Government Board the advantages, from the point of view of economy, promptitude, and certitude of judgment, of employing as arbitrators men with a professional knowledge of the matters with which they have to deal.

Mr. Howard Martin was nominated to represent the Institution on the Tribunal of Appeal under Section 28 of the London Building Act, 1890, in place of the late Mr. Herbert Thomas Steward.

THE CHURCH OF BROU.

IT was only yesterday that we were in Bourg, yet beyond the church of Brou and a garage, I remember nothing of the place. The garage was like other garages; but the church of Brou is like no other church in the world. In the first place, instead of dragging through centuries of building, and never quite reaching completion, it was begun and finished in the space of twenty-five years—from 1511 to 1536—and it was supervised and paid for by a single person, Margaret of Austria, who built it in fulfilment of a vow made by her mother-in-law, Margaret of Bourbon. The last Margaret died before she could undertake her project, and her son, Philibert II., Duke of Savoy, called "The Handsome," followed before he could carry out her wishes. So his duchess, the other Margaret, undertook the work, and here on this plain, between the Juras and the Saone, she wrought a marvel in exquisite churchbuilding which still remains a marvel almost untouched by any blight after four hundred turbulent years. Matthew Arnold wrote a poem on the church of Brou, which may convey the wonder of its beauty. I shall read it some day, and if it is as beautiful as the church I shall commit it to memory, and on days when things seem rather ugly and harsh and rasping I will find some quiet corner and shut my eyes and say the lines and picture a sunlit May afternoon and the church of Brou. Then perhaps I shall not remember any more the little mean things of the moment, but only the architectural shrine which one woman reared in honour of another.

It is not a great cathedral, but it is by no means a little church. Its lofty nave is bare of furnishings, which perhaps lends to its impression of bigness. But then you pass through the carved doors of a magnificent "jubé," or screen, and the bareness disappears. The oaken choir-seats are carved with the richness of embroidery, and beyond them are the tombs—those of the two Margarets and of Philibert, husband and son. I suppose there are no more elaborately wrought tombs in the world than these. Perhaps their very richness detracts from their artistic value, but I would rather have them so, for it shows somehow the thoroughness and sincerity of Margaret's intent—her determination to fulfil to the final letter every imagined possibility in that other's vow. The mother's tomb is a sort of bower—a marble alcove of great splendour within and without. Philibert's tomb, which stands in the centre of the church, between the other two, is a bier supported by female figures and fluted columns and interwoven decorations, exquisitely chiselled. Six cherubs and a crouching lion guard the royal figure above, and the whole, in spite of its richness, is of great dignity. The tomb of the Duchess Margaret herself is a lofty canopy of marble incrustations, the gorgeousness of which no words can tell. It is the superlative of Gothic decoration at a period when Gothic extravagance was supreme.—From "Through the Juras by Motor," by Albert Bigelow Paine, in "Harper's Magazine" for May.

HORIZONTALITY AND VERTICALITY IN THE ARCHITECTURAL TREATMENT OF TOWN PLANNING SCHEMES.*

By BARRY PARKER, F.R.I.B.A.

I WILL assume at the outset that someone among those to whom I address myself is profoundly ignorant, and will be interested in things as elementary as those which interest myself.

So when you feel inclined to resent my taking up your time with things you have known from the cradle, please remember it is not to you I am speaking, but to that profoundly ignorant person.

I have always felt that before one can begin to understand anything about town planning one must know clearly what the phrase "A living art" means. This chiefly because it is necessary to a grasp of the fact that, in periods of living art, town planning was also a living art.

Architecture is not "a living art" to-day.

This does not mean that all architectural work is to-day lifeless. We have men who impress their own personality upon their work. These men put some of the life which is in them into their offspring.

But there is all the difference in the world between our putting some of the life which is in us into our art, and art being so living that it puts life into us, giving us strength to go along with it step by step as it ascends to the highest peak it reaches, and to descend with it as it declines.

In history there is scarcely a period in which art was not such a living force in some part of the world, but it has not been such a force in Western Europe and America for the past hundred years or more.

Now, "a living art" is not always ascending.

A man does not necessarily die in the prime of life. He may still live, though he be in his declining years. So an art may be still living, though in its decline.

All great styles of architecture have first evolved till they reach their highest glory, and then declined, but have lived while declining.

Before we attempt a closer analysis of what is meant by "a living art" we must notice one important fact—namely, that in most architectural compositions the quality of verticality or that of horizontality predominates. That many architectural compositions are on the border-line between these two qualities does not detract from the advantages to be gained by classifying them into vertical and horizontal.

For town planners it is the most useful classification we have. The value of the rough classification of moral attributes into virtues and vices is not materially affected by the fact that many actions are on the border-line, that an action may be neither virtuous nor vicious, or virtuous in some instances and vicious in others; that thrift, for instance, may sometimes be a virtue, though it is generally a vice.

We must realise that it is the whole spirit of the composition which must determine into which class we put it; that the whole feeling of each may be different from that of the other; that each may express a different set of ideas and ideals.

It is not enough to simply note whether horizontal or vertical lines preponderate. To do this would not infrequently result in our putting a composition into the wrong class altogether. Horizontality may create a feeling of tranquillity, rest, contentment and quiet dig-

* A Paper read before the Town Planning Institute.

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nity. Its tendency is to subordinate the individual to the good of the whole.

Verticality creates a feeling of aspiration, joyousness, vigour and uplifting.

I suppose the feelings each inspire in us are similar, whether conveyed through architecture or through scenery. While the long level lines of flat country have a quieting effect upon us, mountainous scenery takes us out of ourselves and awakens in us a desire to strive joyously after something better than we have yet reached. It stirs within us feelings of discontent with things as they are. Again, while we are still young, hopeful and enthusiastic, architecture possessing a sense of verticality most appeals to us. As we get older, and our enthusiasms die down, and we begin to find that which is stimulating is irksome, and we come to wish not to be uplifted or inspired, but to be left alone, we come to prefer horizontality.

While we are still young enough to feel real enthusiasm and inspiration, to enter Rothenburg brings tears of joy to our eyes and awakens in us, whether we will or no, an enthusiasm akin to the religious fervour of its builders.

Our appreciation of architecture which embodies the quality of verticality is largely an emotional one, whereas our appreciation of architecture which embodies the quality of horizontality is almost wholly an intellectual one.

Karlsruhe cannot give us the joyful uplifting feeling Rothenburg did. It chiefly pleases us because it makes no emotional demands upon us, leaves us tranquil and with a sense of intellectual satisfaction. Our appreciation of Karlsruhe may be a more educated appreciation, but our appreciation of Rothenburg will be more thrilling. I do not attempt to say which is best.

Yet we should notice, and perhaps some of us may be surprised to discover, that it is not most frequently in the work in which the element of verticality preponderates we get ostentation and vulgarity, but in work in which the element of horizontality preponderates. For instance, there is a certain humility in Gothic, and often we find in Renaissance work a base pride to be the motive underlying and expressed.

In architecture (as in everything else), if our study is not to be superficial, our first business must always be to realise the motives which have brought any given work into existence, to understand the ideas it expresses, and appreciate its spirit. We must remember that it is not only some of the greatest refinements in architectural taste whch have found expression in symmetry, proportion, long-level lines and equipoise, but that these have not infrequently been used to express only ostentatious display, bombast, and vulgarity. Symmetry, proportion, and equipoise have been not infrequently the "be all and end all" of those who have nothing nobler to express.

But to return to the elucidation of the phrase "A living art." The earliest living art of which we know was that embodied in the pyramids, temples and mastabas (smaller tombs) of Egypt.

All great art is the expression of ideas. The idea expressed by the pyramids was that they were built for eternity. The mastaba was cut out of the solid rock, not formed in built-up masonry. There being, therefore, no construction to suggest form, suggestions were borrowed from the buildings to which those who cut these mastabas were most accustomed. These were wooden structures formed of timbers which were little more than large stiff reeds, there being no large timber grown in the Nile valley. When a column capable of supporting weight had to be devised, a number of these reeds were bound together; so the men who formed a masataba carved conventional representations of such columns in the solid rock.

This may have been right or wrong, but at least it had a strong element of artistic vitality in it.

When Egypt was under first Greece and then Rome, both Greece and Rome had the wisdom to sustain the Ptolemaic dynasty and to allow the Egyptians to develop their art in their own way. It is hardly possible to trace the influence of the conquerors upon it.

When we turn to the second Theban kingdom we find that the idea expressed in the architecture of this period is that of an autocratic government, occupied in investing everything with a profound feeling of mystery, and with the desire to inspire awe and dread of the king and the priesthood.

Time will not permit of my attempting to show the development of Egyptian architecture; and the architecture of other periods and of other climes is really better for our present purposes, because from it may be grasped the meaning of the terms "A living art" more readily perhaps.

Neither must we do more than also just touch upon another period of living art—that of the Assyrians. There is no stone or wood in the valleys of the Tigris and the Euphrates, so the Assyrians had to devise a method of construction which was independent of the use of these materials. This led to their making sun-burnt bricks. When the Assyrians built in regions in which there was stone they used stone, but in the valleys of the Tigris and Euphrates whole palaces were built by them in sun-burnt bricks. Each chamber was vaulted. When chambers in large Egyptian buildings were covered in, it was with great slabs of stone. The vaulting material of the Assyrians was not good enough to enable them to erect a vault of any considerable span, so all their chambers had to be small.

In the tomb of Beni Hasan was long thought to be the prototype of the Greek Doric column, but now there is held to have been no connection between them. The columns in the tomb of Beni Hasan were cut out of the solid rock, and took the form this would naturally give them, a simple squared form with the angles cut off. The Greek Doric was probably developed from a wooden building.

In the palace of Tyrinus we have a transitional building of part wood and part stone. In what is left of it we can see the preparation made for fixing wood antæ and wood columns.

The life of the Doric order was simply one of gradual refinement and perfection of detail.

It is only necessary to compare the so-called basilica at Pæstum with the Parthenon to realise how living was the art of the Greeks.

What is true of the Doric is true also of the Ionic and Corinthian; the history is one of gradual development.

The Romans carried on Greek traditions, only modified very greatly by their re-discovery of the use of the arch and their marvellous developments in engineering skill.

We have seen that the arch in a somewhat crude form was known to the Assyrians. There is also sufficient evidence to show that the principle was known to the Egyptians.

Perhaps Gothic vaulting and tracery furnish us with examples of evolution and growth which best help us to an understanding of the term "A living art."

In the Roman basilica we have the beginning of the cross vault. Earlier vaults had been only simple barrel vaults. Probably it was the desire to raise the heads of the windows higher than the barrel vault admitted of, and so to illuminate the space within the vault, which led the Romans to invent the cross vault. This was a genuine cross vault; though the ribs did not project, they were there, and were true arches supporting the filling.

In Gloucester Cathedral, in the north aisle of the nave, we have the same cross vault, only with the transverse ribs frankly expressed. In the Shoreham choir we have the same vault again, only in it is the Gothic pointed arch. In Lichfield nave we have the same

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cross vault again, but with intermediate ribs of tiercerons introduced into it.

The use of the pointed arch in vaulting made many things possible which are not possible where the round arch is used. Two round intersecting walls must be carried to the same height at their crowns, or untrue curves are created at points at which they intersect, but where the pointed arch is used these intersections may always be true mitres, the smaller vault may take the curve of the greater vault, and the only thing affected will be the angle of intersection at the crown. The history of Gothic art is one of increasing mastery over materials. It is, of course, empirical, rather than scientific, in our modern use of that term. It demonstrates gradually increasing confidence. Its first forms are massive, but at every stage its builders become more and more venturesome, less and less material was used, and greater knowledge of their capabilities was evinced.

Having at every stage cut away more and more material, both from the vault itself and from its abutments, the Gothic builders came to feel the need of struts between their ribs, and introduced what are known as "tierne" ribs. These at first were always true struts, each was always opposed to another, strutting it, and in return being strutted by it, as in King's College Chapel at Cambridge, where the fan vault is still a true vault, and where, if you trace any rib, you will find it to be strutted by another rib.

The construction is what it appears to be. But when Gothic vaulting reached its final stage the main transverse ribs, intermediate ribs, and the lierne ribs all came to be merely decoration carved on the surface of the vaults, as in Henry the Seventh's Chapel at Westminster, where the arches which really carry the weight pass through and behind the surfaces of the stonework, and that which appears to be the vaulting is suspended from them.

(To be continued.)

SEWAGE PURIFICATION PLANTS FOR SMALL COUNTRY RESIDENCES AND ISOLATED BUILDINGS.*

By A. P. I. COTTERELL, M.Inst.C.E., F.S.I., Assoc.Soc. M.O.H. (Fellow).

THE principles of sewage disposal for small purification plants are the same as for large installations, only there are, if possible, more pitfalls to be avoided the smaller the installation becomes. So many factors that are negligible when dealing with large sewage works become of importance in a small installation, factors that are easily overlooked and yet are sufficient to cause a breakdown of the whole system.

We have to remember, for instance, that the purification plant will be situated within a very short distance of the house, and the sewage will come down with fæces fresh and organic matter scarcely broken up. In a town works the length of time from the first discharge of sewage to its treatment at the outfall may be a matter of hours; in a small plant it may be only one of minutes. The moment sewage is discharged putrefactive agencies are at work, and when it arrives at the outfall, largely broken up and diluted with water and other admixtures, its treatment at the works is facilitated.

In the second place, the variation in flow will be extreme, in one moment dropping to practically nothing, at the next coming down in a huge rush.

Thirdly, hot water poured down the sinks has not time to cool, and if it carries grease with it such grease is likely to solidify at the purification works and to clog the apparatus.

Fourthly, there is greater danger of stoppage through large substances, brushes, cloths, and such like, being discharged down the drain.

Fifthly, there is often an excess of solids, especially where the water supply is limited, that makes a strong sewage, requiring the works to be proportionately larger for efficient purification.

Sixthly, there is the liability of a larger proportion of grit and mineral matter being washed from garden paths and unpaved surfaces than is likely to take place in a town.

Seventhly, oil and garage waste may be sent down in bulk and may upset the system.

Finally, there is greater liability of neglect. The works are not large enough to employ a skilled person, and he must be an exceptional gardener who prefers to take care of them rather than of the flowers and greenhouses that fall under his charge.

It will be seen that to adequately deal with these and other matters that attach especially to a small installation a more ample margin of safety must be provided than for larger works, and everything should be simplified to the last degree in order, if possible, to enable even a wayfaring man, though a fool, to work it.

From the point of view of national economy the best system of purification for isolated houses is still application to suitable land. And of all methods of land treatment, were it not for æsthetic objections and difficulty of efficient supervision, the conservancy system, economically speaking, is the best. There are many places where this simplest process of nature can still be used. The writer would like to draw attention to the Richardson earth closet, for country cottage property or places where there is plenty of garden ground under cultivation. It is an arrangement of the late Mr. Charles Richardson, M.Inst.C.E., engineer of the Severn Tunnel, and was used by him for the navvy quarters during the construction of the works. His contention was that if only the liquid could be separated from the solid the latter could be more readily broken up, while the liquid, if absorbed by dry earth, could also be acted upon more rapidly than if retained by the solid in a putrescent mass. In his day nitrifying bacteria and the study of oxidising micro-organisms generally had not come to the front, but his theory can be confirmed by the knowledge we have now gained. He therefore paved his closet floor to a slight slope, got the cottager to pile a heap of garden mould in the arched opening, and from time to time all the man had to do was to throw part of the heap over the closet contents inside, shovel it away, and dig it into his garden.

Moule's earth closet carries out the same idea of deodorisation, and if constantly attended to is fairly satisfactory; but it suffers from the admixture of solid and liquid, an objection met by Mr. Richardson, and it also needs careful attention, a requirement that it rarely gets.

The conservancy system, however, does not deal with slop water, and this becomes a pressing problem, especially where a water supply is laid on. If the water supply be from a well or similar source, the writer has dealt with slop water by running it into a small tank containing an automatic syphon, whence it is periodically discharged down a drain. This drain, at a suitable distance from the house, changes into three or four lengths of agricultural pipe laid radially with open joints in arable soil just beneath the surface. In course of time these pipes may become clogged, but it is a simple matter to take them up, clean, and replace them.

A good water supply is very important, and wherever it is supplied it is advisable to adopt a more elaborate system of disposal than above described. Our modern conception of civilisation necessitates a system of water carriage, and unless some other outlet is at hand a purification plant, in its fuller sense, becomes inevitable.

The two stages of sewage purification are:—(*a*) Sedimentation accompanied or not by chemical precipitation and by digestion of colloidal matter; (*b*) oxidation.

These stages must be passed through, whether the works be large or small, only with more or less elaboration of detail, according to the size of the plant. For instance, the first stage may be divided between several

* A communication to the "Journal of the Royal Sanitary Institute."

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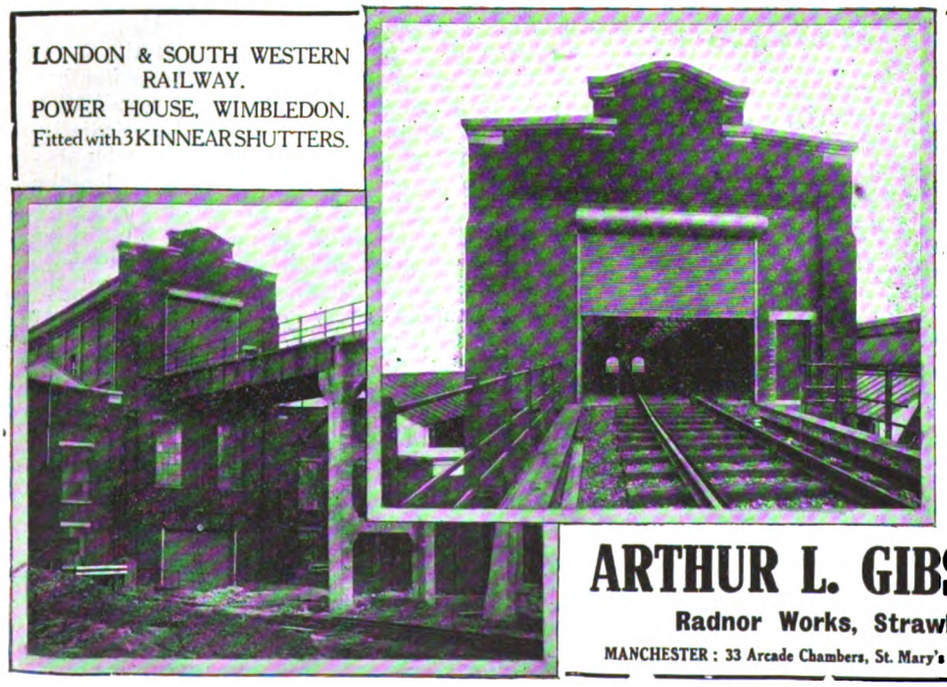
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units, grit chambers, tanks and digestion chambers; whilst the second stage is often spread over two or three filters or beds in series.

The first stage is the more elaborate one. Sewage comes down containing solids in suspension, solids in solution, colloidal matter from grease and soap, mineral matter like gravel and ashes, and half broken up vegetable and animal debris upon which the putrefactive agencies have scarcely yet begun to act. These, with the exception of the solids in solution and the liquid products of decomposition, must be retained and dealt with in the first stage, or the oxidising plant will become clogged and unfit for its purpose. Even land can be ruined, but there is generally plenty of this, and the damaged area can be set aside until it recovers.

In the second stage of purification the sewage, relieved in a large degree of its suspended solids and floating or inert matter, is brought into contact with oxidising bacteria, either in land or filters or contact beds.

These all have the same purpose, to provide the means whereby through the agency of air the organisms may break down putrescent liquid matter into nitrates and stable compounds. They will deal with a certain quantity of solid matter—indeed, at times they have to—but it will be at the cost of their efficiency. The solids will, or should, remain in the interstices of the oxidising material and be broken up by aërobic organisms, quickly if of reducible matter, but very slowly if of a colloidal or starchy nature. Sometimes the filter, or its equivalent, may indeed get overloaded in another direction, by oversepticisation in the first process and consequent de-solution of solids in solution into colloidal matter. This is a defect that should at once be remedied.

There are several types of purification plant upon the market that embody the above-named principles. But it is a great error to instal one of these after having furnished the makers with a few rough particulars and imagine that all will go right. Conditions vary constantly, and every case should be considered by some one who knows at least a little about the subject. Fortunately makers usually provide a fairly wide margin of safety, and such is the kindliness of nature that she can thus rectify the mistakes that may have been committed in her name.

The simplest type of purification plant, if it deserves such a title, apart from land treatment pure and simple, is the cesspit with subsequent irrigation of a prepared land area. The watertight non-overflow cesspit required by the by-laws is not only impossible but an anachronism if a piped water supply is laid on to the building. Unless of enormous dimensions, in which case the emptying is beastly, it soon fills and overflow commences. To have it frequently emptied, even by the public exhauster, is a nuisance and most expensive. Equally bad is the porous cesspit that allows its contents to percolate into the subsoil. It must be remembered that the subsoil has practically no purifying effect at more than 4 feet beneath the surface, and the results of sewage being allowed to escape in this way may be serious.

If a cesspit is properly designed, and if the second stage of purification is duly provided for, this type will answer for a small building. But it has the inherent weaknesses of mixing up indiscriminately all the processes of the first stage of purification, of smell and of nuisance from constant emptying.

Provided there be sufficient fall, and a small available water power, it is possible to instal a revolving screen or screens to pick up heavy solids, and to carry the liquid on for land treatment. But it is only fair to point out that such an apparatus, in fact any kind of preliminary screen, needs constant supervision, a provision that could scarcely be expected in most country installations.

Types of tank and types of filter are numerous, and they are used in various combinations. A well-known type for institutions and large country buildings is the septic tank, open or closed, and the clinker filter fed by revolving distributor. Another type is the contact bed in place of the filter. In yet other cases the filter is rectangular, and is supplied with fixed distributors, chiefly of the trough pattern, arranged to spread the liquid as evenly as possible over the surface. Well known amongst these is the drop-by-drop distributor. The rectangular filter is occasionally fitted with a travelling distributor, a small replica of that used in larger works.

Then there is the semi-septic and the non-septic tank, made by one or two firms, and used in connection with one or other of the above types of filter. Its capacity is small, but it is made deep, the sewage entering and leaving some way down so as by allowing a minimum stay in the tank to avoid the generation of septic or putrefying conditions. Yet again there is the slate bed, really a large pore contact bed, the essential characteristic of which is aërobic treatment. The vertical flow tank is found as well as the horizontal flow tank, and each have their uses.

These are just a few illustrations of the types that are used, and they will all work successfully if properly designed to fit their special conditions.

A small preliminary chamber is sometimes inserted as a diverting chamber when there are two tanks, and this, if made deep enough, will act as a grit catch pit for mineral solids. A storm overflow is also sometimes constructed, since it is just as important as in a larger plant that the tank and filter action should not be overborne by too heavy a discharge. The plant should not be strained beyond three times the dry weather flow.

Another detail, too often omitted, is some provision for picking up any final solids, inert or otherwise, that may come away from the filter. If there is plenty of land, passage through rough trenches will suffice. Sometimes a humus tank is advisable. A friendly pond looks tempting, but it must be capable of being cleaned, as solids will collect there, and, should the works get overcharged, it may occasionally have to deal with other than inert matter.

(To be continued.)

ART IN LONDON.

MODERN ORIGINAL ETCHINGS AT THE DOWDESWELL GALLERY.

THOUGH it is easy, as usual, to select half a dozen or so which are pre-eminently striking amongst all the exhibits, yet it is proper to remark that their absence would leave a display well worthy of high praise. It is very, very far removed from being *Sex et præterea nihil*. But then the names of the artists speak for themselves—Seymour Haden, Zorn, Menpes, Howarth, Whistler—names with which to conjure surely. And yet in the present exhibition, whilst we have included the name last mentioned, we must confess that neither of the two works by that master appealed specially to us; whereas two out of the seven contributions of Mr. Percy Robertson (whose name we omitted from the above list) are two of the best works exhibited.

Specific mention shall, in the first place, be made of those which rank highest. Anders Zorn's "Beadle" appeals by reason of the characterisation and of the workmanlike qualities in general. On Mr. Howarth's "Westminster" and "York" we will not dwell here, as we expressed our full appreciation of them recently,* and indeed reproduced them amongst our plates.† Mr. Robertson's masterpieces, to which we made passing reference above, are "Grassmarket, Edinburgh," and "Holborn Bars," but we should make mention of a third—"Waterloo Bridge"; we have seen various representations of the last-named, none better than Mr. Robertson's. The technical qualities of his work rank high. M. Belleroche's art recalls Dana Gibson to a large

* "The Architect," February 18, 1916.
† Ibid., March 17, 1916.

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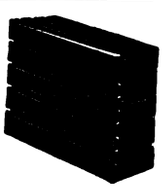


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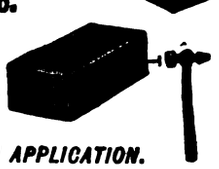
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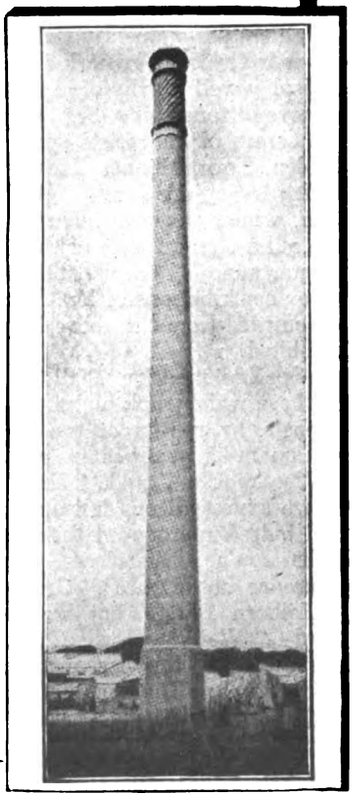
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extent; his "Jeanne" is full of charm. Mr. W. P. Robins' "Interior of a Barn" is full of vigour and lacks even the suggestion of meretriciousness. These are of the first rank, but many others are close competitors. We were interested in M. Bauer's "Tower of Babel," but why is it circular? Is it feasible to suppose that these early builders, though not perhaps pioneers, were sufficiently advanced to produce such work? Far more likely is it that they worked a square or oblong tower. Miss K. Cameron's work is good of its kind. Sir Seymour Haden's mezzotint grips with its vigour of touch, its romanticism, its light and shade.

The majority of the nineteen artists represented have something attractive to show, and we must not pass over without notice M. Auguste Rodin's sole piece, "Victor Hugo." A curious effect often produced on etchings is that of the sketch having been made during a heavy downpour; the pavements and roadways seem to be glistening with moisture, even when we know that such effect is unintentional. It is a most worthy exhibition, and adds one more leaf of credit to Messrs. Dowdeswell's expanding volume.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

ESSEX.

Chelmsford.—Main workshops, Bishop's Hall, for the Hoffmann Manufacturing Co., Ltd.

Dagenham.—Offices: addition for the Sterling Telephone and Electric Co., Ltd.

Great Warley.—P.M. Church: school chapel, Warley Road.

HAMPSHIRE.

Aldershot.—Building, York Road: additions for Captain Brown.

Offices, Albert Road: additions and alterations for Messrs. R. Simonds & Sons.

KENT.

Maidstone.—Congregational Church. Messrs. Ruck & Smith, F.R.I.B.A., architects, 86 Week Street. Messrs. Corben & Son, contractors, West Borough.

Wainscott.—Fifty houses for Strood R.D.C. Messrs. W. R. Barton & Son, contractors, 37 Parrock Street (£15,025).

LANCASHIRE.

Bolton.—St. Mark's Church: vestries.

Transformer House, Mortfield Lane, for Messrs. T. Cross & Co.

Haydock.—Four houses, Grange Road and Clipsley Lane, for Messrs. R. Evans & Co.

Oldham.—The Royal Infirmary: extension.

SURREY.

Epsom.—Two cottages, Upper Court Road, for Mr. E. Stredwick.

SUSSEX.

Eastbourne.—Cottage Home, Dacre Street: enlargement for B.G. Mr. F. G. Cooke, architect, 2 Hyde Gardens; also

Premises, Hartfield Road: alterations for B.G.

WARWICKSHIRE.

Allesley.—House, for Mr. F. Randle (of Coventry).

Coventry.—Nos. 412-414 Foleshill Road: alteration for Messrs. Freeman, Hardy & Willis, Ltd.

599 workmen's houses and ten shops, Stoke Heath, for the Corporation.

Premises, Hastings Road and Brighton Street: additions for Mitchells & Butlers, Ltd.

Erecting shop, Broad Street, for the Condor Engineering Co., Ltd.

Picture Theatre, Cox and Ford Streets: conversion from existing premises, for Mr. E. Strong.

Drapers Field Works, Sandy Lane: mess room for the Daimler Motor Co., Ltd.

Edgewick Works, Canal Road: machine shop for Alfred Herbert, Ltd.

Radford Works, Daimler Road: mess rooms for the Daimler Co., Ltd.

Works, Smith Street: additions for T. Smith's Stamping Works, Ltd.

WORCESTERSHIRE.

King's Heath.—Secondary school for Birmingham Education Committee.

YORKSHIRE.

Cleckheaton.—"Cheerbarrows": farm buildings, &c., for Mr. R. Hirst.

Batley Carr.—Warehouse, Carr Mill, for Messrs. Cook, Son & Co.

Edlington, New.—P.M. school chapel.

Golcar.—Three houses, Scapegoat Hill, for Mr. J. Hoyle.

Spenborough (near Cleckheaton).—The "Swan" Hotel: alterations for the Springwell Brewery Co., Ltd.

Gomersall Mills: extensions for Messrs. T. Burnley & Sons, Ltd.

Stables, &c., Windybank Lane, for Mr. J. Kershaw.

WALES.

Kidwelly.—House at gasworks, for Messrs. Willey & Co.

SCOTLAND.

Dalmuir.—Board school, for the Old Kilpatrick School Board.

Glasgow.—Buildings, Newlands and Franklin Roads, Cathcart, for Messrs. G. & J. Weir, Ltd.

R.C. school, Muslin Street, Bridgeton.

Premises, Hope and Renfrew Streets: alterations for the New Savoy Theatre, Glasgow, Ltd.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 10,849. May 2, 1914.—R. J. W. Parsons, Hele, Manor Park Crescent, Edgware. Method of jointing as applied to the construction of reinforced concrete floors, wall, roofs, partitions, divisions, and all similar structures.

6,811. May 6, 1915.—J. Stone & Co., Ltd., Deptford, and W. S. Parsons, "Glymedale," Baring Road, Grove Park, Kent. Liquid raisers.

7,079. May 11, 1915.—Antoine Dujardin, architect, 81 Kensington Gardens Square, Bayswater, W. Leon Lootens, 63 Cavendish Road, Brondesbury, N.W., and August Verraert, 38 Sunnyside Road, Ealing, W. Concrete structures.

7,393. May 17, 1915.—Hugo van de Loo, Venlo, Holland, and Erven de Gruyter, Venlo, Holland. Apparatus for adding a disinfecting liquid to the flushing water of washout closets.

9,813. July 6, 1915.—W. R. Williams, Owensboro, Kentucky, U.S.A. Road grader.

10,271. July 14, 1915.—G. E. H. Woods, Dingley, viâ Cheltenham, Bourke, Victoria, Australia. Method of and apparatus for dressing stone.

13,833. Sept. 29, 1915.—Frederick Pollard, Strand Lane, Douglas, Isle of Man. Bench stop for joiners' or wood-workers' benches.

17,015. Dec. 3, 1915.—Leonard Taylor, 3 Cooke Street, Hulme, Manchester. Eye and device for fastening stair rods.

100,225 (3,560, March 29, 1915).—Henry Pearson, Wason Manufacturing Co., Springfield, Hampden, Mass, U.S.A., and John Renfrew, Luyano, Habana, Cuba. Adjustable hinges.

Any of the above specifications may be obtained from J. D. Roots & Co.

DUNSTABLE PRIORY CHURCH.—A CORRECTION.—In the letterpress accompanying a photograph of the nave of this church last week we remarked that though the name "Dunstable" has a familiar ring, yet it is difficult to associate it with anything. And it was added that the town has never given a name even to any article of commerce. In this statement we were apparently wrong, and therefore our apologies are due to the ancient town. A correspondent informs us that "Fifty years ago Dunstable was much more celebrated than Luton for its Bonnets." The mistake must be attributed partly to the smallness of our acquaintance with ladies' headgear.

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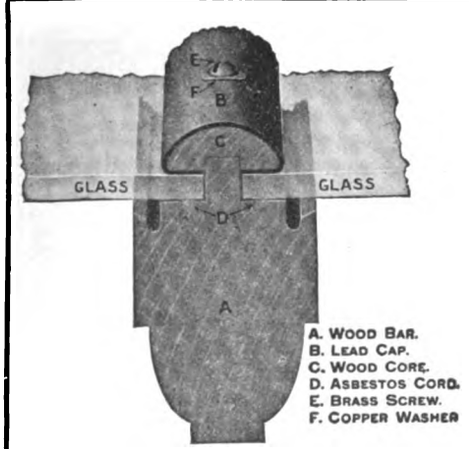
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THE ARCHITECT

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FORTHCOMING EVENTS.

Saturday, June 17.

Institution of Municipal and County Engineers: West Midland District Meeting at the Guildhall, Shrewsbury, at 11.30 P.M.

Monday, June 19.

Royal Institute of British Architects: Ordinary Meeting. Presentation of the Royal Gold Medal.

Thursday, June 29.

Institution of Municipal and County Engineers: Annual General Meeting at Blackpool. (Three days.)

ART AFTER THE WAR.

In the columns of the French daily Press there has of late been considerable discussion as to the probable course that will be followed by art in France after the war, and the discussion has rather tended to range around those forms of art which are not included in the purview of those who consider the "fine arts" to be of paramount importance, with painting in the premier position, sculpture a distinctly inferior second, and architecture a very indifferent third.

Thus M. Léandre Vaillat, in the "Temps," referring to the annual Salons at the Grand Palais, organised by the Société des Artistes Français and the Société Nationale des Beaux-Arts, speaks of the almost contemptuous sufferance accorded to art as displayed in glass, in pottery, in book-binding, and in furniture, maintaining a distinction between the greater arts and the lesser that should not be even supposed to exist.

In particular, M. Vaillat makes reference to the lack of appreciation in France, just as we are accustomed to experience in our own country, by the public of the true position of architecture amongst other forms of art. The architectural rooms at the Salon are like that at our own Royal Academy, a desert whose solitude is only occasionally invaded by sweethearts in search of seclusion for their philandering, free from observation and interference. The Press critics who fill columns with their panegyrics or their animadversions on pictures and sculptures represent the general attitude of their public by devoting but a few meagre lines to the work of masters in building. In all of which manifestations of general opinion we find that the French man in the street is very like his English contemporary—a Philistine.

It is somewhat curious that such a state of mind should exist amongst a people who boast the work of a Lebrun at Versailles, a master who of a habitable building fashioned a masterpiece of art by his ability to enforce a discipline upon all who worked under him, that ensured a harmony of expression extending throughout the whole battalion of individual craftsmen and artists whose productions go to make up the unity of the foremost of French palaces.

Compare such unity of effect with the impression to be derived from a tedious promenade through room after room of an exhibition of pictures, sculptures, potteries, embossed leathers, and other bric-à-brac. In the former, a feeling of a harmonious whole in which it is good to live—if one were a great monarch. In the latter, the sensation of an unrelated concourse of isolated and divergent examples, beautiful though perchance they may be. In the one the lesson is conveyed that art may be, and should be, intimately connected with, and form a part of, the whole environment of life. In the other, the conviction that a collection of individual objects, however excellent each may be in itself, is not a satisfactory manifestation of the true function of art.

The exhibition and the museum are but the cemeteries of art, to ensure the life of which it is essential that in every room, in every house, in every building, paintings, sculptures, pottery, furniture, all should contribute to a harmonious ensemble, subjected to a rule of discipline and organisation, analogous in the surroundings of life to that which transforms a mob into an army.

Already, before the war, in recent years Paris has seen in the activities of the Salon d'Automne and the Salon des Artistes Décorateurs a recognition of the danger of the public tendency to regard art as an affair of exhibitions and museums, and an attempt to enforce the lesson that all artists are, or should be, decorators—that is to say, capable of collaboration in enhancing the decorum, the amenities of life, of uniting their efforts in the extension of art in the human dwelling, and that a painting, a sculpture, a ceramic, should take its place not as an individual object of art, but as a component of a harmonious whole.

In France this movement has been somewhat handicapped by the tendency on the part of some of its protagonists to display in their productions a leaning towards those forms of art which pose as "modern style," of which the fundamental principle is a resolute avoidance of all connection with the art of the past, a disregard of all precedent, and a straining after originality at all costs, even to the cult of ugliness.

But surely one lesson that the war should have taught is the advantage of unity of effort, of harmonious co-operation, even if their attainment necessitates a subjection of the individual to organisation and discipline. Yet this is no new lesson. Such a condition prevailed in all the epochs of the past when art flourished as the universal environment of life, and we may hope such may be the restored condition that awaits Art after the war.

B

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NOTES AND COMMENTS.

SIR ASTON WEBB, in the "Observer," puts forward very forcibly and clearly the case against the proposed expenditure of £170,000 on the strengthening of Charing Cross Railway Bridge, with the view of directing the attention and enlisting the sympathy of the general public in opposition to the Bill, of which the preamble has been proved to the satisfaction of a House of Lords Committee. As Sir Aston puts it, "London is again threatened, unless it rouses itself at once with a renewed life, for this 'oxide Behemoth' is a permanent hindrance to all improvement in this the very eye and centre of London. One wonders whether London as a whole will ever gain control over its own affairs. Here we have a shaky old railway bridge, condemned by the various authorities controlling the different interests of London, retained solely at the wish of a railway company."

In a recent number of the "Journal of the American Institute of Architects" attention is called to a practice that seems to be adopted by some architects in the United States in respect to the publication of books of illustrations of work which they have done, or of books in which their works, amongst others, are illustrated. The practice referred to is for the architect concerned to urge forcibly upon manufacturers whose goods they have used an advertisement thereof in the published work. In answer to an inquiry as to whether it would be possible to start some agitation in the "Journal" against the practice, the editor replies:—

"What is the answer? The only one we know of is 'Stop!' As long as fear is stronger than the wish to stop, or as long as one waits to grow 'strong enough' to stop, that kind of a publisher will persuade that kind of an architect to engage in that kind of a game; that kind of an architect will hold up that kind of a manufacturer; that kind of a publisher will hold up that kind of an advertiser; and that kind of an advertiser will hold up that kind of a publisher.

"Of such is the reducible minimum in all professions, trades and callings, growing smaller year by year—as the history of professional standards bears witness. It is made up of those who do it without thinking—of those to whom it seems the easy way—of those who do it against their judgment and justify it by necessity—and, lastly, of those who do it deliberately from choice. These last represent the irreducible minimum which is discoverable and avoidable by all who care to take the trouble."

It will be noticed that it is suggested that the practice is followed more often through want of thought or easy-going complaisance than from intention to gain profit or credit. We hope that such a practice may not find a footing in this country from any of the causes put forward by the editor of the "Journal" or for any other reason.

In a recent issue we referred to a series of suggestions made by Mr. F. Sydney Eden for the protection of old painted glass in war-time. An article in the "Morning Post" points out that no protection is sufficient to avoid the effect of the violent air-disturbance caused by high explosives, which involves both sudden increase and decrease of normal atmospheric pressure so that windows may be either blown out or blown in. Hence the only real safeguard is the removal of valuable glass and its safe storage in some bomb-proof store, preferably underground.

The President of the Durham and Northumberland Archæological Society has been delivering his views very forcibly on the works which have been and which have not been carried out at Durham Cathedral. "Thank heaven," he said, "the nave has been finished. So I hope there will be no more damage done there. There has been a great deal of money spent over the nave, money, in my opinion, absolutely thrown away. I have no hesitation whatever in saying I do not believe a single syllable about the insecurity of the nave. It is an entire figment. The nave was as sound as it could be. As to the vaulting of the nave, there was nothing to find fault with. We have heard all kinds of stories, and you know how these things are started. I do not believe there was the least occasion to do anything whatever for the preservation of the fabric of the nave. Over and over again, I have been over the vaulting of the nave, and I do not believe what was said about it; that there was a shrinkage. I do not believe a single word of it. I am very sorry to find that now the tower is said to be insecure. If that sort of thing goes on much longer we shall have no Cathedral left at all. We might as well be under a Zeppelin bombardment. The Cathedral will disappear. You know how these things are set about. There are people who have an interest in it. It is all unnecessary work. There is work about the Cathedral which ought to be done, but it is not done. The greatest improvement to the Cathedral, I think, would be the rebuilding of the north porch to the main entrance to the Cathedral. The foundations are there, and there are any number of drawings to guide us. The present entrance is a very mean, contemptible thing, and the rebuilding of the north porch would relieve the north front of that intolerable baldness which now prevails. But they won't spend a thousand pounds over that, but they can spend £5,000 or £6,000 over less important things. There is another thing that ought to be done in the Cathedral. A most valuable screen was put round the Shrine of St. Cuthbert in the time of Queen Mary. This screen, of great historical interest, was entirely removed, the most stupid thing that ever took place. But the greater part of that screen is still in existence. It ought to be put back again. It would add very much to the appearance of the Cathedral. That has not yet been done. Why, I cannot tell, or under whose influence it has not been done, I do not know. I have expressed myself quite as strongly as I ought. But I do hope that something may be done to stop the useless expenditure of money over things which are not needful at all."

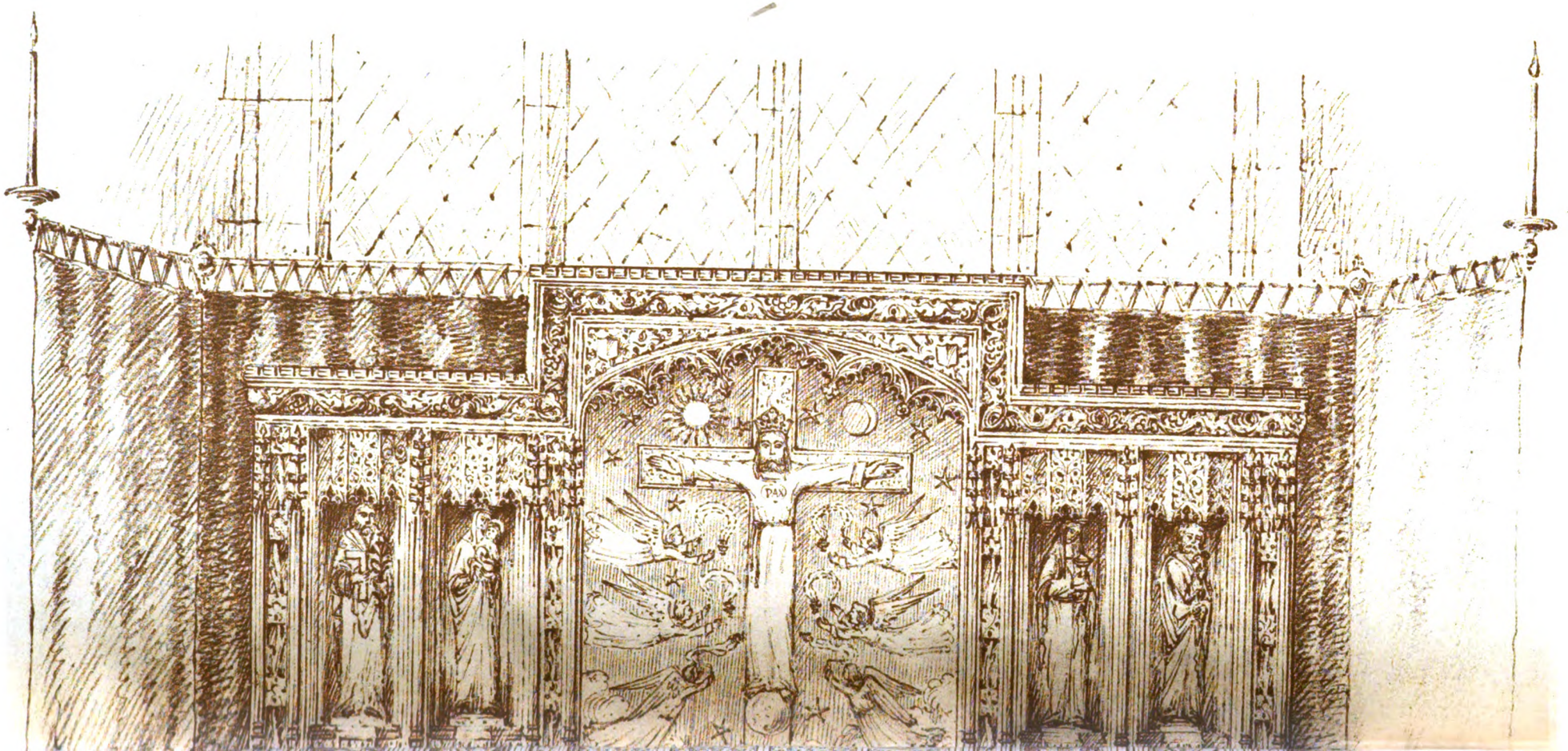
The June number of the Newcastle "Cathedral Magazine" contains an important statement headed "Our Cathedral Rood-screen." It appears that a complaint having been made to the Bishop (Dr. Wild) of the figure of our Lord having been placed upon the cross surmounting the rood-screen—for which Chancellor Errington refused a Faculty last August—the Bishop summoned the vicar and churchwardens with the residentiary canons to meet him, and explain their disregard for the ruling of the Court. In his reply Canon Gough tells the history of the screen, which was erected by the then vicar, afterwards Bishop Lloyd, without a Faculty. A few weeks before his death in 1907 Bishop Lloyd expressed a wish that the screen might be completed to the original design. Early last year Lady Ravensworth offered to complete it. After pointing out that Chancellor Errington had "severely traversed" his predecessor's ruling in the case of St. Luke's, Newcastle, the vicar emphasises the point that while the Chancellor would certainly have granted such an unopposed Faculty in the case of a parish church, he must, for some occult reason, refuse it in this case because St. Nicholas is a Cathedral church.

The further excavation operations last week in the nave of Dunfermline Abbey Church prove almost to a demonstration the theory of Mr. P. Macgregor Chalmers, architect, Glasgow, as to the site of St. Margaret's early church. The work is not yet completed, but it has been established that St. Margaret's Church stood on a site at the east end of the present nave of the Abbey Church, and between the lines of the Norman pillars. It has been found that the early church was not exactly on the same line as the later Abbey buildings. The church was divided into four sections, comprising at the east end a semi-circular apse, a chancel, and a nave, and at the west end by a magnificent tower about 22 feet square. The foundations of the tower are 6 feet in breadth. It is interesting to note that the foundations are almost complete, the south wall alone being wanting, as it fell under the line of the south pillars of the nave.

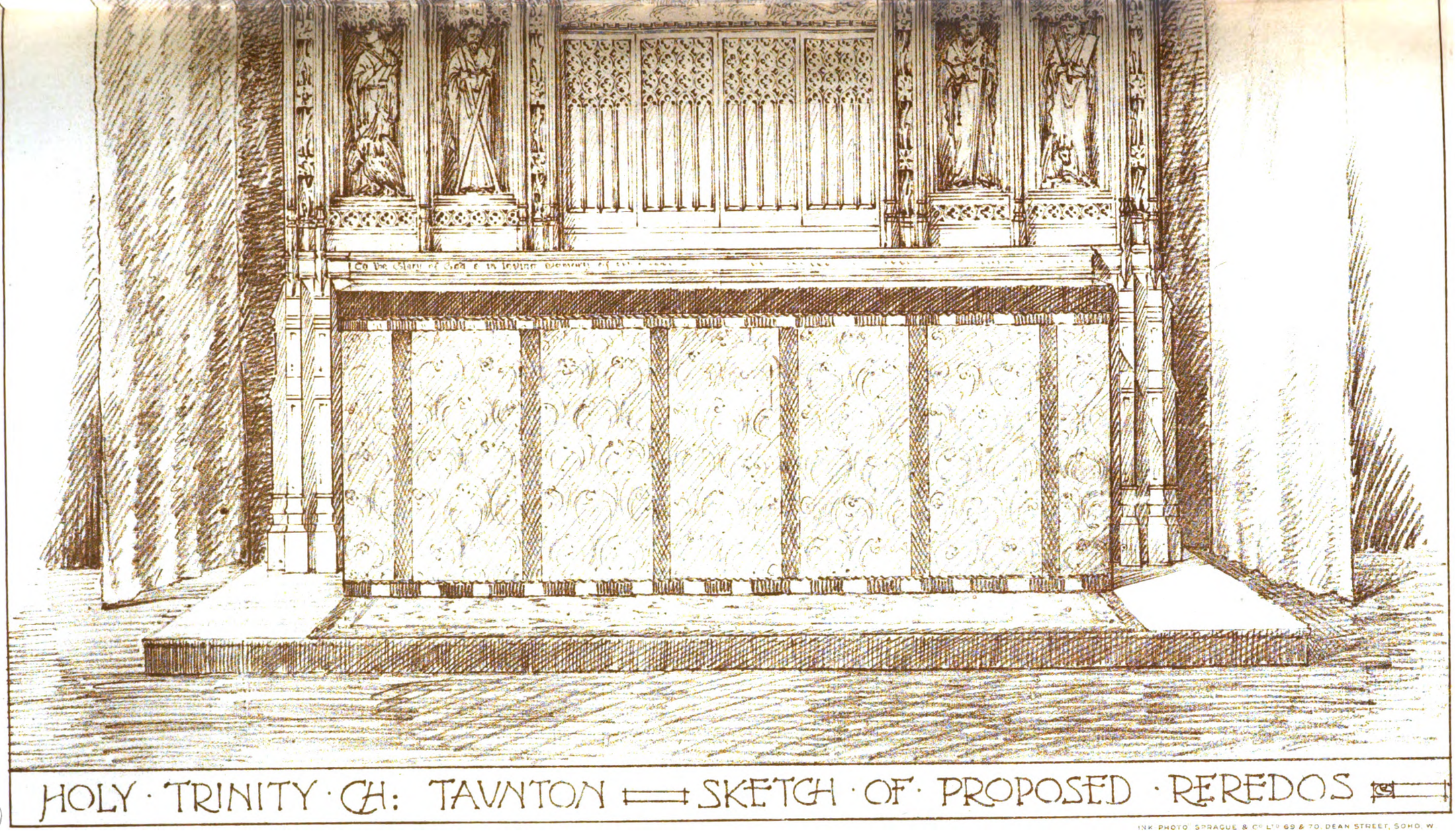
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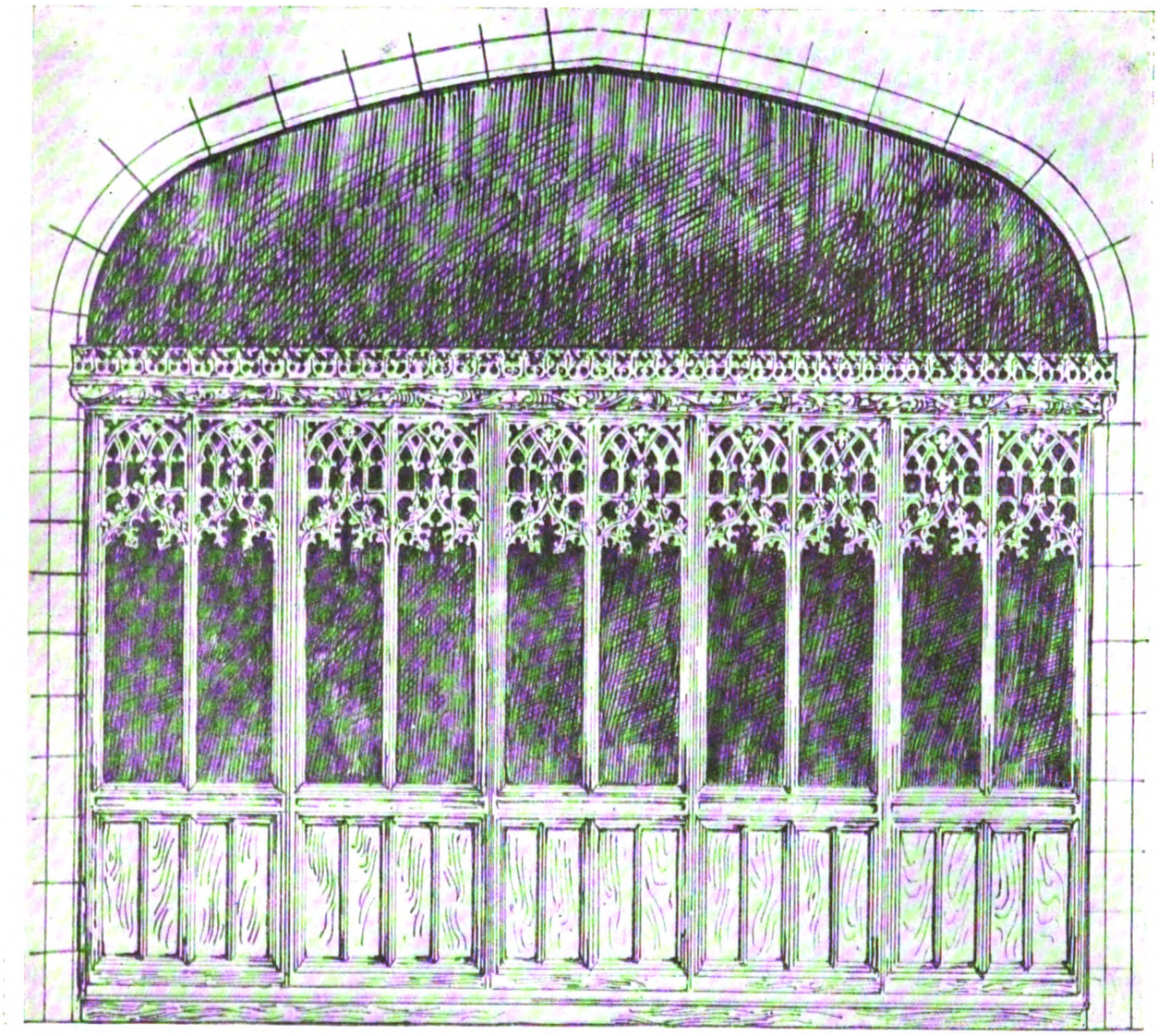
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MR. F. BLIGH BOND, F.R.I.B.A., Architect.

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PARCLOSE SCREEN, THORNBURY CHURCH, GLOS. [Mr. F. BLIGH BOND, F.R.I.B.A., Architect.

An interesting stone was dug out between two of the pillars on the north side. This stone proved to be a Saxon capital. It has been very well preserved, and is a unique architectural relic of St. Margaret's foundation. The Carnegie Dunfermline Trustees are defraying the cost of the excavation work, which was authorised by H.M. Board of Works.

In the ancient Saxon church of Bradford-on-Avon, in Wiltshire, a brass tablet has just been erected to the memory of the late Canon Henry Rich Jones, who discovered the existence of the church when all knowledge of it had completely passed out of human memory. The church, as Professor Bonney says, "had disappeared from sight as completely, and for a longer time, as the regalia of Scotland," and yet it might have ben found at any time by somebody with the right kind of eyesight. Canon Jones, who was Vicar of Bradford-on-Avon, found it when he was looking down on the little town from a height. It was buried among more recent buildings; but it is tall for its size, and it was the lines of the roof which attracted Mr. Jones' attention. There seems no doubt that this is the church of which William of Malmesbury in the twelfth century says: "There is at the present day on that site at Bradford a little church which Aldhelm is stated to have built in honour of the most blessed Laurentius." Aldhelm died in 709.

PARCLOSE SCREEN, THORNBURY CHURCH, GLOS.

THE screen is executed in selected oak by Messrs. R. L. Boulton & Sons, sculptors, of Cheltenham, from designs and drawings by Mr. Frederick Bligh Bond, F.R.I.B.A., architect, and is a memorial by the late Sir Stafford Howard, of Thornbury Castle, to his wife. The screen traverses the arch at the eastern extremity of the south aisle of the parish church, and acts as a western enclosure to the old chapel on the south side of the chancel, which has been refitted for use as a morning chapel, and is now being supplied with an altar and oak panelling.

ILLUSTRATIONS.

REREDOS FOR HOLY TRINITY CHURCH, TAUNTON.

THIS work is a memorial to the late Vicar, the Rev. E. Armstone Ducket, and is the gift of parishioners and friends, who had collected a fund for the general purpose of a memorial prior to the outbreak of the war. The work is being executed in English oak by Mr. Herbert Read, of Exeter, from designs by Mr. Frederick Bligh Bond, F.R.I.B.A. The central panel, which is carved in low relief, represents our Lord as reigning from the Cross, after the more ancient manner. It is hoped that

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in later and happier times the whole work may be relieved with gold and colour.

"CRAIGIEBARN," DUNDEE.

By reason of their bright colour note and the capable execution, these water-colour sketches by Messrs. Maclaren, Sons & Soutar formed a feature of the Royal Scottish Academy in 1915.

This Dundee residence was built for Mr. Henry W. Renny, but the sketches illustrated formed only preliminary designs, the house being built to an entirely different plan.

OXFORD COLLEGE SERIES.—NOS. 168 & 169.—MANCHESTER COLLEGE.

MANCHESTER COLLEGE was built in the years 1891-93 on a site to the north of New College, from the designs of Messrs. Worthington & Son. The College is intended for a training in theology for post-graduates. The buildings include a chapel and library, the former containing some stained glass designed by Burne-Jones. We shall illustrate the interior of the chapel next week.

AN ARCHITECT'S HOLIDAY WITH A CAMERA IN NORTHERN ITALY.—XXIV.[1]

By CHARLES T. RUTHEN, Licentiate R.I.B.A., M.S.A.

(*Conclusion.*)

SANTA FOSCA (Torcello), a Byzantine church, connected by a quaint loggia or cloister to the Duomo, although the exact date of its origin is obscured, is probably coeval with the last-named edifice. Santa Fosca, it is said, was originally a basilican church of the ninth century, partially rebuilt in its present form in 1008, on a Byzantine model after the plan of the later Greek churches.

It is written by some authorities that indications in parts point to the beginning of the twelfth century as the date of the structure as at present existing. Externally it is octagonal in shape, preparations having been made in the construction for a dome covering, but this was never erected, and the building is at present covered with a flat timber roof.

The interior, with its grey marble columns and delightful capitals, is particularly striking and interesting. Two small museums of antiquities are situate in the immediate neighbourhood. The Museo Provinciale contains a fine collection of coins, banners, &c.; likewise some good specimens of carving and sculpture by Italian artists. The Museo Estuario contains many objects of interest to the lover of carving, sculpture, and antiquities.

Torcello is situate about five miles north-west of Venice, and in making the return journey the island of Burano (to the south of Torcello) is visited, a picturesque little fishing-place with about 5,000 inhabitants. Close to the landing stage is situated a great lace-making establishment, known as the Royal School of Lace-making, and employing about 400 girls. Here the most costly of laces of all kinds are manufactured.

Venetian lace, renowned throughout the world in the fifteenth to seventeenth centuries, was almost entirely superseded by French and Flemish lace; but in 1872 great endeavours were set on foot to revive the lace industry, and in Venice, Pellestrina, Chioggia, and Burano (together with some of the minor islands of the estuary) to-day there are over 5,000 workwomen employed in the manufacture of lace, embroidery, and similar products. Close by is the church of San Martino, with its lofty campanile, and possessing within some few fine pictures. There is not much besides to cause one to prolong the stay in this place, and the journey is continued in the direction of Murano.

The Littorale San Erasmo, once famous for its pine forests, is skirted, near the northern extremity of which is the islet of San Francesco del Deserto, shaded by lofty cypress, but unfortunately exposed to malaria. This little island is connected to Burano by a wooden bridge and contains the malarious cemetery. Passing through the Porto dei Tre Porti (the narrowest entrance into the lagoons) into the outer waters, the re-entrance into the lagoons is made through the Porto di Lido, the chief entrance to the city of Venice.

This entrance is protected by a mole nearly two miles long, constructed in 1894. In the latter end of the tenth century a scene was enacted here, annually on Ascension Day, known as the Blessing of the Sea and of the symbolical marriage of the doge with the Adriatic.

The narrow channel separating the fortified northern end of the Lido from the island of Le Vignole (with the pretty Renaissance Forte Sant' Andrea, of Istrian marble, begun in 1544 by Sanmichele but not completed until 1571) is negotiated, and, sailing round the island of Certosa, Murano comes into sight.

To the north-east of Venice, at distance about three-quarters of a mile, lies the island of Murano, next in point of interest to Torcello. The town is a quaint little place with a population about equal to Burano. A fine view is provided from this island of the shining domes and campanili of Venice, sparkling in the brilliant sunlight, and on the skyline to the north-east a picturesque view of Burano and Torcello rising out of the rippling expanse of clear blue waters of the lagoons.

Since the close of the thirteenth century Murano has been the exclusive seat of the Venetian glass industry, an industry first introduced from Grado, a little town on the Lido, in the early middle ages. Grado is situate in the gulf of Trieste, and is one of the most frequented bathing resorts in Austria. After the establishment of the Venetian-glass industry in Murano its zenith was reached in the fifteenth and sixteenth centuries; but after the seventeenth century declined. The fine palaces, which once were the pride of Murano in the days of its prosperity, have practically vanished, and its magnificent gardens are now great vineyards.

Landing at the steam-boat station of Colonna, situate on the south-west side of the island, and walking along the Fondamenta dei Vetrai, the simple and roomy basilica of San Pietro Martire is soon reached. Erected in 1509, this church contains many fine pictures, including a beautiful altar-piece by Giovanni Bellini, "Madonna enthroned with SS. Augustine and Mark," executed in 1488. The Museo Civico contains a fine collection of glasses illustrating the products of the local industry, and many other objects of general interest.

The church of Santi Maria e Donato is perhaps the most interesting item, from the architectural point of view, on this island. This edifice, the Duomo of Murano, is of very ancient origin, reputed to have been first completed in 970, but largely rebuilt after the great earthquake in 1117, and then completed some twenty-three years later and extensively restored in 1858-73.

This is a Romanesque edifice with many striking and interesting features. The low and heavy apse is particularly quaint, with its two rows of open arcades and curious brickwork between.

There is a harmony about the entire exterior design of this church, making the whole specially effective. The campanile is plain and imposing, and eminently typical of the character of the church. The interior is distinctly impressive, a basilica in form with nave and aisles and transepts resting upon piers. The Greek marble columns supporting the open roof are beautiful, and the capitals have the character usual in Italo-Byzantine architecture. Perhaps the great interest in this ancient church is in its wonderful mosaic pavements, resembling those of St. Mark's, Venice. This work dates from 1140, and the subjects are those common in that particular period of mosaic art. The Byzantine mosaic in the half-dome of the apse of the interceding Madonna is a wonderful piece of work, and is said to date from the twelfth century. The pulpit is of striking design, and is executed in light grey marble.

A number of other mosaics complete the items of

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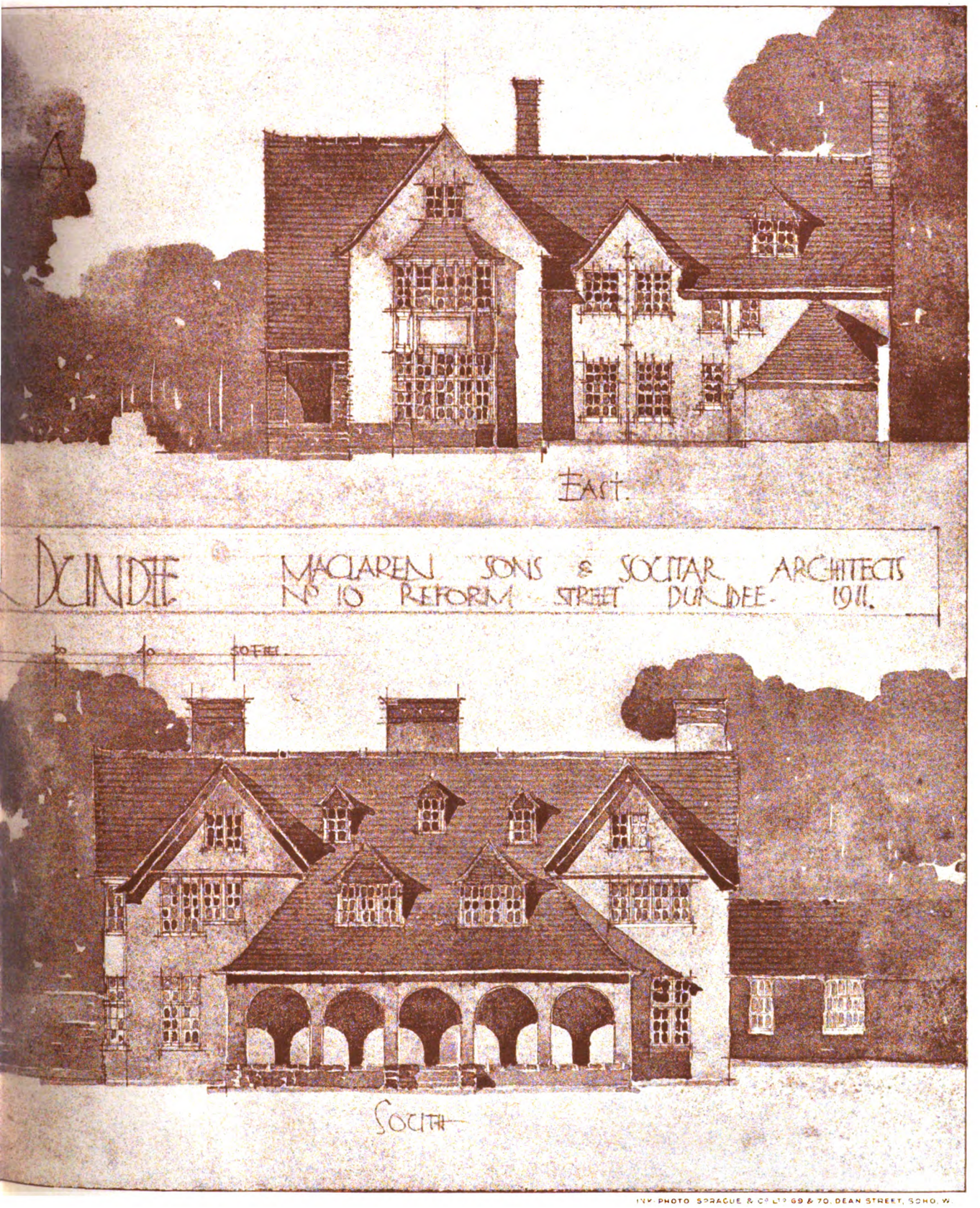


"CRAIGIEBARN

(Royal Scottish Academy, 1915.)

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DUNDEE.

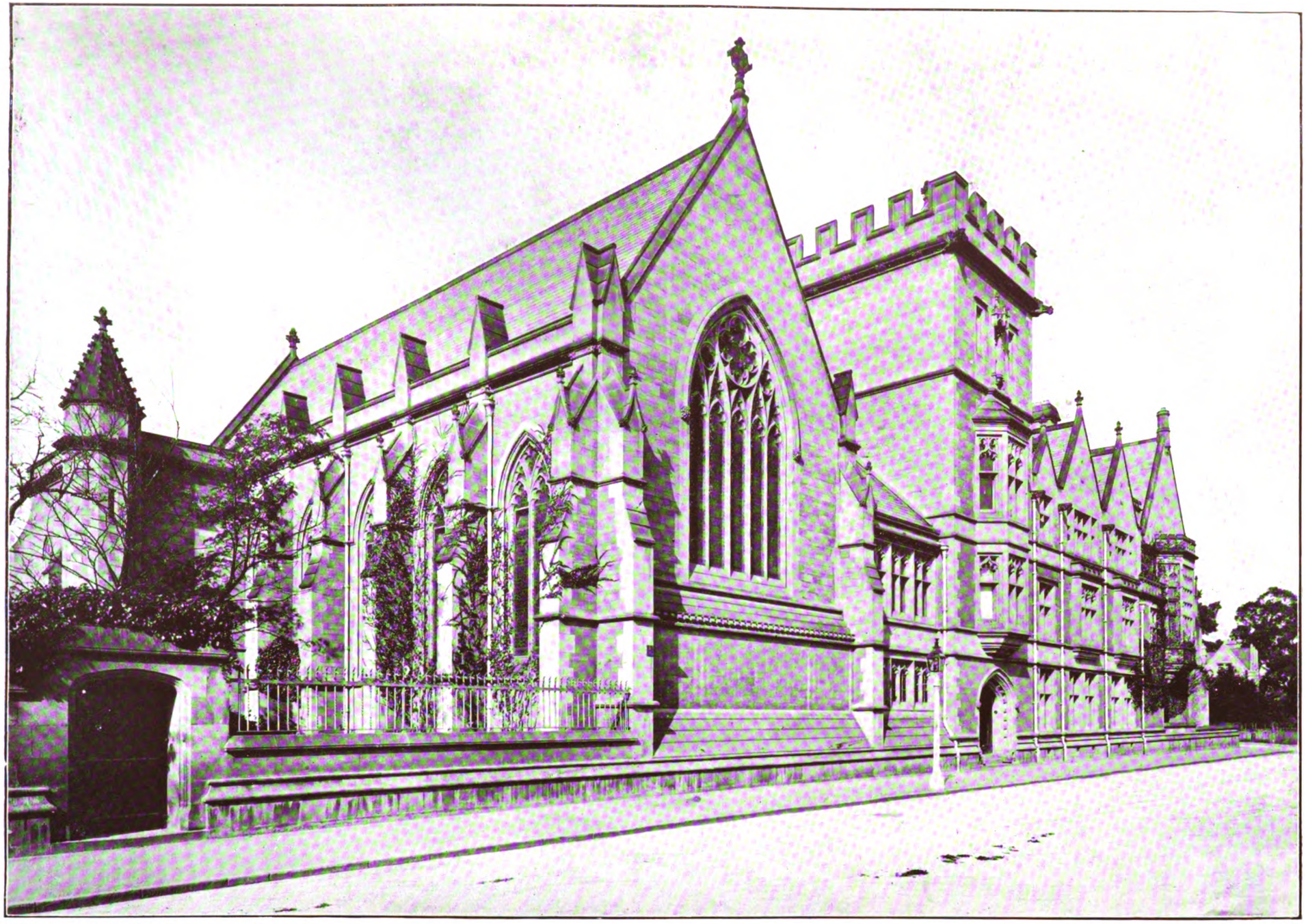
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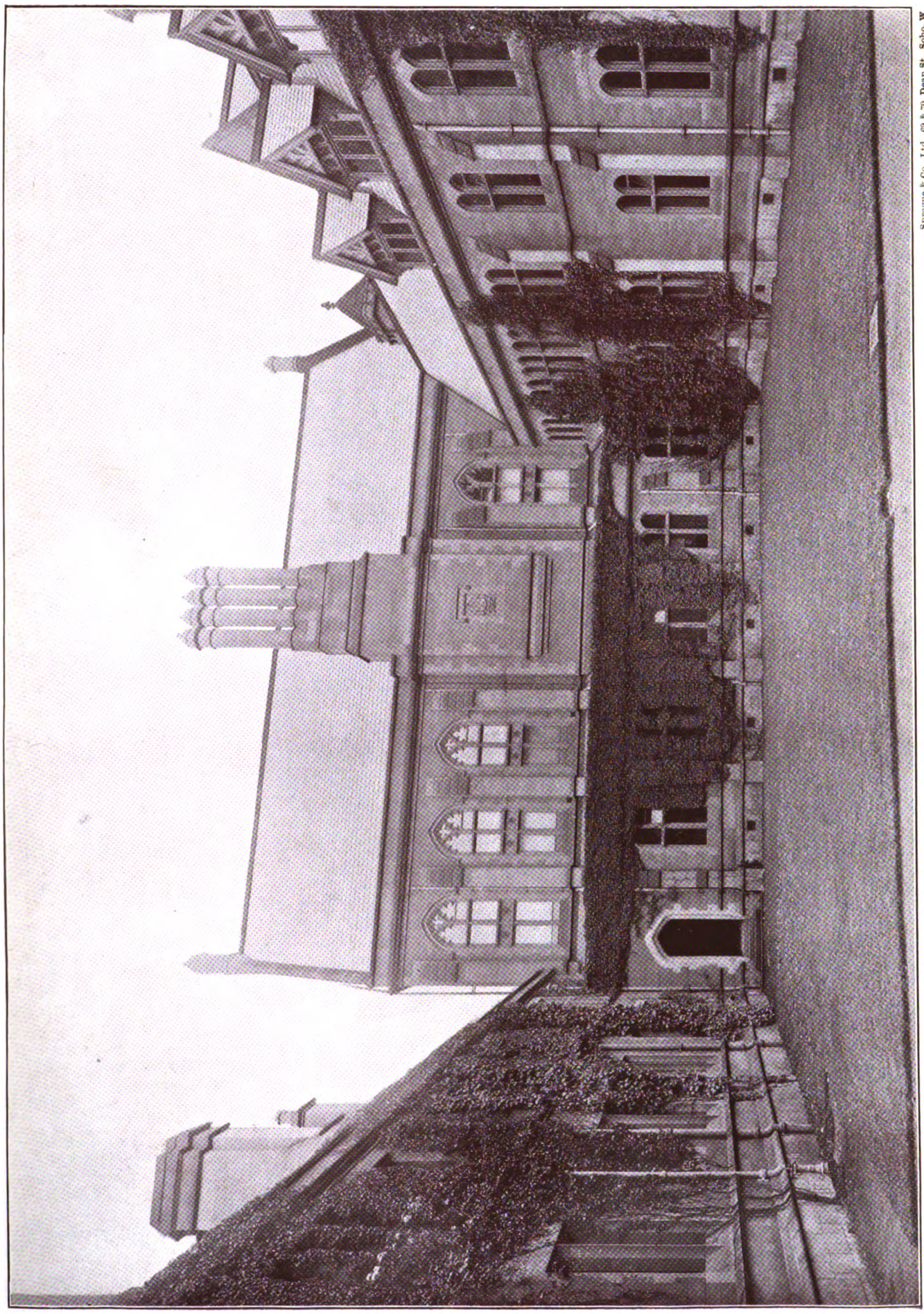


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OXFORD COLLEGE SERIES. No. 169.—MANCHESTER COLLEGE: QUADRANGLE.

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interest in this old cathedral, and the return journey to Venice is made after an enjoyable excursion lasting from three to four hours.

The last day in Venice is spent in visiting Lido, part of that narrow strip of land separating the Adriatic from the Laguna Venetà. This trip is made by motor-launch, and is, perhaps, to the ordinary holiday seeker, the most enjoyable excursion undertaken from Venice.



BURANO.

It is a pleasure island in the ordinary acceptation of the term, separated from the Littorale di San Erasmo by the Porto di Lido, and forming, in continuation with the Littorale di Malamocco to the Porto di Malamocco, a narrow barrier some seven to eight miles long, between the foaming, restless Adriatic and the still waters of the lagoon. Lido, besides being the favourite excursion from Venice, is a famous pleasure resort, and in the season is full of pleasure-seekers of all nationalities.

Here there are many fine hotels and villas, and those who are the fortunate possessors of plenty of time and money make long stays, particularly during the summer-time. Lido, which may be reached in under one hour by gondola from Venice, ranks with Viareggio and Rimini as among the most fashionable bathing resorts in Italy.

The landing at Lido is made at Santa Maria Elisabetta di Lido, close to the little church of that name, and a tram-car may be taken here, and a circular tour made along the lagoon front, through the Parco, past the Excelsior Palace, and back through the Gran Viale a Mare, a broad level boulevard along the fringe of the Adriatic, to the Viale Vittorio Emanuele Terzo, a shady avenue lined with villas, leading back to the landing-stage.

There are numerous palatial bathing establishments near the foreshore, and in the season the long, broad sea-front of sparkling sand is literally lined with hundreds of capanne (bathing-boxes), owned by the municipality and by the Società dei Bagni di Lido.

At the junction of the Gran Viale a Mare and the Viale Vittorio Emanuele III., in a fine open square, stands the Stabilimento dei Bagni, a great structure, the terraces of which actually are washed by the Adriatic; close by is the open-air theatre and the aquarium.

At the southern extremity of Lido, upon the Gran Viale a Mare and close to the Parco, stands an immense establishment, the Stabilimento Bagni Excelsior, facing the sea, and about one and a half miles from the landing stage. This great bathing establishment was erected in 1907-8 to the designs of Giovanni Sardi, in the Moorish-Venetian style, and is imposing because of its size; but the detail is decidedly uninteresting. An idea of the size of this structure may be obtained by the knowledge that it contains 500 bedrooms and other suitable accommodation. Its quaint view tower is quite a feature of this palatial pile.

There is something strikingly familiar and home-like to the Englishman in the broad and open boulevards and the great expanse of bright golden sands of Lido, not in any way unlike the watering places and pleasure resorts in one's own country, with perhaps that essential difference in atmospheric conditions. This popular Italian bathing place is exposed to the full force of the Adriatic, with its accompanying invigorating breezes. The essential qualifications of Lido are emphasised and magnified after the sojourn in the narrow winding ways of its famous neighbour, and thus one feels this excursion pre-eminently fitted as the forerunner of the final peep into the lanes and byways of Venice.

Leave is taken of Lido, and the famous lagoons are



THE GRAN VIALE A MARE, WITH THE STABILIMENTO BAGNI EXCELSIOR, LIDO.

for the last time crossed, and shortly the narrow water-streets of Venice are again entered.

Regretfully, almost sorrowfully, the final journey to the station is undertaken, and the picturesque Venetian carriage is entered. Dodging fitfully into some narrow waterway, silently slipping beneath some quaint old-world bridge, suddenly emerging into the great water-highway of the city, and then darting through some narrow tortuous short cut, the station comes into sight, and soon the grimy train is dolefully entered, and one is borne away from one of the greatest and most wonderful cities in the world.

The time spent upon the outward journey and the residence in Venice renders necessary the rapid execution of the homeward journey. It is, therefore, unnecessary

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to dwell upon the features of this long and weary voyage. It can however be truthfully said that if the discomforts and disagreeable incidents of this holiday had been tenfold greater, the pleasures derived far and away out-balance such, and no shadow of regret is felt in having undertaken this holiday with a camera in Northern Italy.

ERRATA.

Article III., page 46, sixth line, "or" should read "on."

Article VIII., page 145, 25th line, "subjected" should read "sacrificed."

Article XII., page 216, 1st column, 50th line and onwards, should read, "On the western side of the Piazza Brà rises the Gran Guardia Vecchia or Old Guard House, begun in 1610-14, but not completed until 1821."

Article XV., page 268, second column, sixth line from bottom, the word "the" should be read before "human."

Article XVIII., page 324, first column, 22nd line, the word "not" should be read before "the architect."

GOLDSMITHS' WORK IN THE DARK AGES.*

By Sir WILLIAM MARTIN CONWAY, M.A., F.S.A.

THE eighth and seventh centuries B.C. were for the Greeks something like the sixteenth and seventeenth centuries A.D. for the peoples of Western Europe—a great colonising age. From Marseilles in the West to the Crimea in the East, Greek colonies or trading centres and factories sprang up at all sorts of suitable points on the sea coasts. Several such settlements were made along the north shore of the Black Sea by Milesian colonists in the seventh century. "The Euxine coast," Mr. E. H. Minns tells us, "was the first El Dorado, the first mysterious land, to draw adventurers across broad seas in search of fame and treasure." Thus arose Olbia, Panticapæum (the modern Kerch), and many more once thriving settlements. What they throve on was trade. By sea they were in communication with the Greek cities; by land with the Scythians of the steppe, which stretches away without break far to the west, north, and east into the heart of Asia. Their wealth and taste are proclaimed by the vast quantities of treasures, made of gold and often set with precious stones, which the graves in this region have yielded. The gold may have come from north or south. In any case, the Scythians loved golden ornaments, and the Greeks provided such for them. Most were of local manufacture. These fall into two classes: the work respectively of Greek and of local artists. The former are sometimes purely Greek, alike in design and in technique, but oftener they bear evidence of the taste of the people for whom they were made. The latter are massive, ugly, and barbaric alike in design and in execution. These two schools existed side by side throughout the centuries. The barbarian school, with its clumsy representations of beasts and fabulous creatures, and its love of coloured stones, was Asiatic in character. One of its most prominent characteristics was the inlaying of coloured stones, oftenest garnets, in a random fashion into the substance of the gold. The Greeks, after the campaigns of Alexander, under the influence of the inroad of Orientalism that followed, adopted the setting of precious stones in their jewellery as a fashion increasingly popular. The stone most commonly employed was the garnet.

In the first century of the Christian era the manufacture of golden ornaments still went forward in the cities founded by the Greeks on the north side of the Black Sea. We may call these works the product of the Bosporan School. Some treasures were dug up at Siverskaja, in the Kuban district in South Russia. The most striking of these are two Roman glass vessels, elaborately mounted in gold and garnets. One is of simple vase form. The mounts consist of two decorated horizontal bands of gold—one round the shoulder, the other half-way down towards the foot. These bands are connected by a few vertical strips of decorated gold. The strips are set with garnets in a dog-tooth pattern. From the upper band slender gold chains hang at frequent intervals, in all upwards of a score in number. Gold balls are at the lower ends of the chains. The other vessel is a two-handled cup, with a broad gold band round the lip, on which cabochons are set, each held by a ribbon of gold closely fitting round it. Between them are knobs of gold, covered with tiny gold balls. Chains, more numerous than on the other cup, hang from this rim, and each ends in a ball of garnet, with a gold ball hanging beneath it. These cups should be compared with certain chalices in the Treasury of St. Mark's at Venice, which were looted by the Venetians in 1205 from St. Sophia and other churches at Constantinople. Eleven of these chalices present one remarkable feature: from the lower part of the lip-rim of each there hang a series of fine wires, each originally furnished at the lower end with a pearl. These pendant pearls are the direct descendants of the chains and balls of the Siverskaja cups, and the jewelled lip-rims of the chalices likewise preserve the ancient traditional mounting of the Bosporan School. The Siverskaja cups are not later in date than the first century A.D. The Venice chalices may be approximately dated to the eleventh century. Another feature which the South Russian and the St. Sophia vessels have in common is the vertical straps of metal by which the upper and lower rings of the mounts are held together. This trick, if we may so call it, spread over Europe, and did not remain characteristic of Byzantine cups alone; but it is excessively common in Byzantine cups, and was no doubt copied from them by Western craftsmen, who only occasionally employ it, and never until they had fallen under Byzantine influence.

Of contemporary finds further west in the heart of Europe, only two call for brief mention. Both were discovered in Hungary. The first is the Osztropataka find: it consisted mainly of works of Imperial goldsmiths, the most important being an oval fibula formed of a great onyx, framed in a rim of characteristic openwork, such as was fashionable in parts of the Roman world at that time. The necklets, cups, and long fibulæ were all of Roman workmanship. Some embossed silver plates formed part of another find close by, but the animals in relief on these had no barbarian connection. The bulk of these objects must be regarded as of Imperial and some of them of provincial Roman make.

The third and fourth centuries were a critical time in the history not merely of goldsmithy, but of European art, because it was at this time that the Goths (who in the latter part of the second century had left their settled abodes in the lands near the mouth of the Vistula and moved southward) were brought in contact with the civilisation and art of the region north of the Black Sea. They there acquired a taste for jewellery of the Bosporan type, and this taste presently spread through the whole Teutonic world and became an important factor in the growth of the mediæval Gothic art that was to arise in the West. It appears to have been the invasion of the Huns about 376 A.D. that set the peoples in movement and so helped to spread the new art style. It is thus of great interest to observe what the Bosporan style was in the fourth century, and how many of its traditions were directly absorbed by the artists of, or who worked for, the Gothic people. The most important group of jewelled treasures of the fourth century definitely Bosporan in type belong to the Berlin Museum, and were found in a grave or catacomb at Kerch. Along with a brooch was found a diadem as markedly barbarian as the brooch is imperial. The famous Petrossa find contains, among other treasures, two double-handed gold and jewelled cups, evidently Sassanian. In their present condition they resemble open-work baskets, but the open spaces were once filled with plate-set stones. We arrive at exactly the method of mounting stones which is

* Abstract of a Paper read on June 7 before the Royal Archæological Institute at a meeting held in the apartments of the Society of Antiquaries, Burlington House, Piccadilly, W.

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exemplified by the Jelalabad reliquary and the Ardeshir strap-end. So far as we yet know, such work was only made in Persia at this date. The beast handles are likewise characteristically Persian. It is plain enough that these ornaments are not of the Bosporan school as we have thus far made acquaintance with it. Every indication leads to the conclusion that we have here examples of the best work of third or fourth century Sassanian goldsmiths.

After the third or fourth century there is little, if any, work discoverable done by Bosporan craftsmen for Scythian patrons. Thenceforward they worked for the Goths, who by war, pillage, and expansion were growing richer from decade to decade. Whether they worked as valued slaves or free craftsmen we cannot tell. As soon as the true folk-wandering epoch set in, golden and jewelled ornaments were the only kind of artistic products for which wandering chieftains had much use. The bulk of the fifth century barbarian ornaments is very poor stuff, but amongst it we find a few admirable works. One thing is practically certain, the Bosporan region did not remain an important centre of art after the fourth century. The best workmen having gone to more profitable regions (such as Byzantium) those who remained relapsed, so that such works of the school, few in number, as are discovered near Olbia or Kerch, dating from the fifth or sixth century or thereabout, are rude and poor in quality and design.

The sixth century in Western Europe was a period of decadence for barbarian jewellery. If the original impulse toward that art came from the Bosporan region, and the fine work of the fourth and fifth centuries was made by civilised craftsmen, unless those craftsmen could be reinforced by continued intercourse with the home of their art, or quickened by a genuine artistic impulse in the people for whom they worked, nothing but decadence could occur. Neither of these vitalising influences arising, decadence took place. To this sweeping condemnation of barbarian jewellery north of the Alps an exception must be made in respect of three kinds of earrings and the hairpins associated with them; but so great is the contrast between them and other objects found with them that it seems necessary to conclude that they were imported from some more artistic centre of manufacture.

Plenty of instances could be cited of Coptic influence in the west of Europe in the seventh century, but a digression on that subject here would carry us too far. The jewelled round brooches are of great variety, very numerous, and many of them of a high order of decorative beauty. In type they descend from the roundel of the first century from Siverskaja, described at the beginning of this paper. Though of Bosporan origin, it was not in Continental Europe, nor at the hands of barbarians, that the type was preserved and developed. That was done somewhere else, and suddenly in the sixth century the form was introduced from elsewhere into the West, and rapidly became popular. In the seventh century local artificers may have imitated it, and many of the surviving specimens may be their handiwork. But barbarian jewellers of the seventh century stood on a very different level from their rude predecessors, and to them we must turn our attention. Now for the first time in barbarian lands we meet with a named artist, and he is not a painter, sculptor or architect, but a goldsmith, nor is he a man of the artisan class, but a bishop and Minister of State—St. Eloy (born *c.* 588; *ob. c.* 665). His period of activity was about from 610 to 665 A.D. He started life as apprentice to a goldsmith at Limoges, so that we thus have evidence of a settled manufacture at least as early as the very beginning of the seventh century, and this where we should look for it—in the southern part of France, which had been least damaged by the barbarian infiltration.

At this time in Western Europe, as far north as England, a considerable revival of art took place; but it was not primarily a revival of the older leading arts (architecture, sculpture, and so forth), but of the art of the goldsmith. Art patrons doubtless caused to be erected churches and other new buildings; but what they loved above all else was work in the precious metals and jewels, and these then began to be made for them in great abundance. It is enough to read superficially in the history of the Merovingians to recognise that no works of art could give so much pleasure to the princes of that time as those which could be easily carried about. Hence an intense demand for goldsmithy, which from the seventh century onward till the tenth became and maintained itself as the leading art in all the barbarian lands. We may therefore conclude that from about the latter part of the sixth century goldsmiths became settled, active, and presently important craftsmen, rising in a few decades to the position of the leading artists of their day in the kingdoms of the West.

The last great seventh-century goldsmith was the craftsman who seems to have worked in Kent for the Royal Court there, perhaps at Faversham. This man or school is best represented by the wonderful Kingston brooch—as fine a jewel as any produced in Europe in its day. It was found on Kingston Down, Kent, and is now a principal—perhaps the principal—treasure of the Liverpool Museum. Certain it is that the art of this craftsman did not arise in Kent; but in Kent it received a new application and was wedded to a markedly local style of design. It is impossible to mistake the works of this atelier for those of any other. To it we may unquestionably assign a whole group of round brooches and inlaid buckles, all of finest quality. It is safe to assume that the head of this school of goldsmiths was no obscure artisan, but a man probably like St. Eloy, of high and influential position.

We thus reach the end of this rapid purview of the history of the rise of the goldsmith's craft among the barbarian peoples who poured into the Roman world and overwhelmed and destroyed so much that was precious. It has of late been customary to assign to them artistic gifts of their own of too high an order. That they brought a new spirit and much new blood into the West is obvious enough; that this new spirit ultimately gave birth to new and glorious kinds of art is likewise clear. But it is not true that they carried from the borders of the Black Sea the germs of an art which they themselves developed into something great. It was not till most of their moving and fighting and pillaging was done, and they had settled down in their new homes, that they turned to the lands of ancient civilisation and found among the wrecks of its population enough survivors who still cherished the craft traditions of their ancestors to be able by them to create for the new men of power and wealth works of art incorporating indeed the new ideals, but expressing them by aid of a long-standing technique of ancient development.

THE NEW CUNARD BUILDING.

THE Cunard Building is conveniently and appropriately situated on an imposing site adjacent to the Liverpool landing-stage, and commanding a magnificent view of the Mersey estuary. From the Cunard Building, a semicircle of four or four and a half miles radius, having the River Mersey for its diameter, would practically enclose the whole of Greater Liverpool. From this centre the Lancashire docks of the port stretch in an unbroken line north and south, while the great railway depôts which give Liverpool ready access with the London and North-Western, Lancashire and Yorkshire, Midland, Great Central, Great Northern and Great Western Systems are all within a mile limit, the latter on the Cheshire side of the Mersey being linked up with Liverpool by ferry and under-river railway facilities. In addition to these connections, the riverside station of the Mersey Docks and Harbour Board, used in connection with the arrivals and departures of ocean liners, is close by so that the new home of the Cunard Company is admirably adapted for the expeditious and convenient handling of its vast passenger and freight business. The

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site upon which the new building is erected is one of great historic interest. It is part of the old George's Dock, the Parliamentary powers to construct which were obtained in 1766; the preamble to the Bill stating that the dock was necessary to the development of the shipping trade of the port, especially in view of the fact that the existent docks were not deep enough for the increasing size of vessels, many of which were compelled, owing to lack of dock accommodation and insufficient depth of water, to lie out in the open roadstead exposed to strong currents and the rage of tempestuous weather. Even the New Dock, as it was sometimes styled, was soon proved inadequate to meet the port's growing requirements, and in 1822 an enlargement scheme was decided upon and successfully carried out.

During the privateering times, the halcyon days of the Slave Trade, and the many momentous events which marked the development of Liverpool during its 140 years' existence, the George's Dock played a prominent part. Many were the Letters of Marque and Slavers which fitted out alongside its quays. Near by was a chief rendezvous of the Press Gang, and many were the conflicts which were waged by the dock side between these energetic compulsionists and the "prime" seamen, or even able-bodied stay-at-home citizens, who ventured to take the air near its precincts in the evening. Slaves were bought and sold in the coffee-houses adjacent, and altogether the story of the George's Dock constitutes a fascinating study of Liverpool shipping life during some of the more stirring epochs of the development of the port. When steam, however, revolutionised the world's mercantile fleets, and the knell of the sailing-ship was rung, the Dock felt the pressure of the new order of things severely. Larger and deeper docks had been constructed. The African trade, reinforced by steamships, had gone south, and West Indian and American trades north, and the old dock, instead of presenting the spectacle of a forest of masts, began to suggest that it was hastening to decay, and had, in fact, outlived its utilities. But it died hard! Coastwise sailers and coastwise steamers still loaded and discharged there, and occasionally a wooden barque, a picturesque survival of the days of oak and hemp reminiscent of the former glories of the Dock, would tie up against its quays. But in recent days the most interesting survival of the sailing-ship epoch which made the George's Dock its home was the pilot schooner. These beautiful craft, yachts in appearance and sailing qualities, lay here when in port "en tier," and their graceful hulls and snow-white decks and raking masts constituted a nautical picture full of charm and poetry, and were to the seagoer one of the sights of the port. But the Mersey Docks and Harbour Board realised, in common with other shipowners, that steam would not be denied, and with the passing of the pilot schooner there disappeared one of the last of the links which told of the past.

Even when the fiat went forth that the Dock had terminated its career as such and the water was pumped out, its muddy pools, its gaunt sides of red sandstone greened with moss and ribbed with aged oaken fenders, its idle quays and deserted sheds constituted a grim reminder of the fact that modern utilitarianism has little in common with historic sentiment—a truly pathetic picture! What to do with the site of the George's Dock was a problem which, in spite of the many suggestions propounded, defied solution until the Mersey Docks and Harbour Board decided to make its home on a portion of the dock site and erect there a building worthy of Liverpool and the great trust it administers. Next came the Royal Liver Building, and now in between, on the central portion of the area, rises the noble and massive pile of the Cunard Building.

Before commencing building operations, the foundations had to be prepared, and it was decided to embed the massive pillars which support the structure in the solid red sandstone which was the stratum underlying the old dock. Arrangements, too, were made by a system of pumping for dealing with any water which might find its way into the old-time excavation, and with these preparations successfully negotiated the work proceeded apace. Operations were commenced in December 1912 and in June 1916 the Cunard Company were enabled to move into their new palatial quarters, a striking tribute, considering the war, to the energy with which the building operations have been pushed forward.

The style of building to be erected was a matter of much consideration, the difficulty being enhanced by the fact that the immense structure of the Royal Liver Company and the handsome pile of the Mersey Dock Board were in strong contrast. Eventually it was decided to embody in the structure, both in general outline and decorative detail, the best features of the Italian Renaissance as represented by the Farnese Palace at Rome, a building which was completed somewhere about the middle of the sixteenth century. This palace was the home of the family from which sprang the famous Pope Paul III., Elizabeth, wife of Philip of Spain, and the long line of Princes of Parma, including the celebrated governor of the Low Countries, who loomed so largely in the history of the Armada days. The Cunard Building, however, secures to a greater degree and on a much vaster scale than the Farnese Palace the primitive simplicity and dignity aimed at by the architectural school whose tenets and aspirations it embodied.

The outstanding impression aroused by an examination of the exterior of the Cunard Building is that of massive, solid elegance suggestive of great spaciousness and comfort within. The length of the building from the front façade on the pier head to the city façade is 330 feet, the width of the former being 170 feet and the latter 200 feet. The height from the basement is 125 feet, and from the foundations in the bed of the old George's Dock, 170 feet.

The design of the building is the combined work of Messrs. Willink & Thicknesse, of Liverpool, and Messrs. Mewes & Davis, of London. The contract for the construction was entrusted to Messrs. Cubitt, of London.

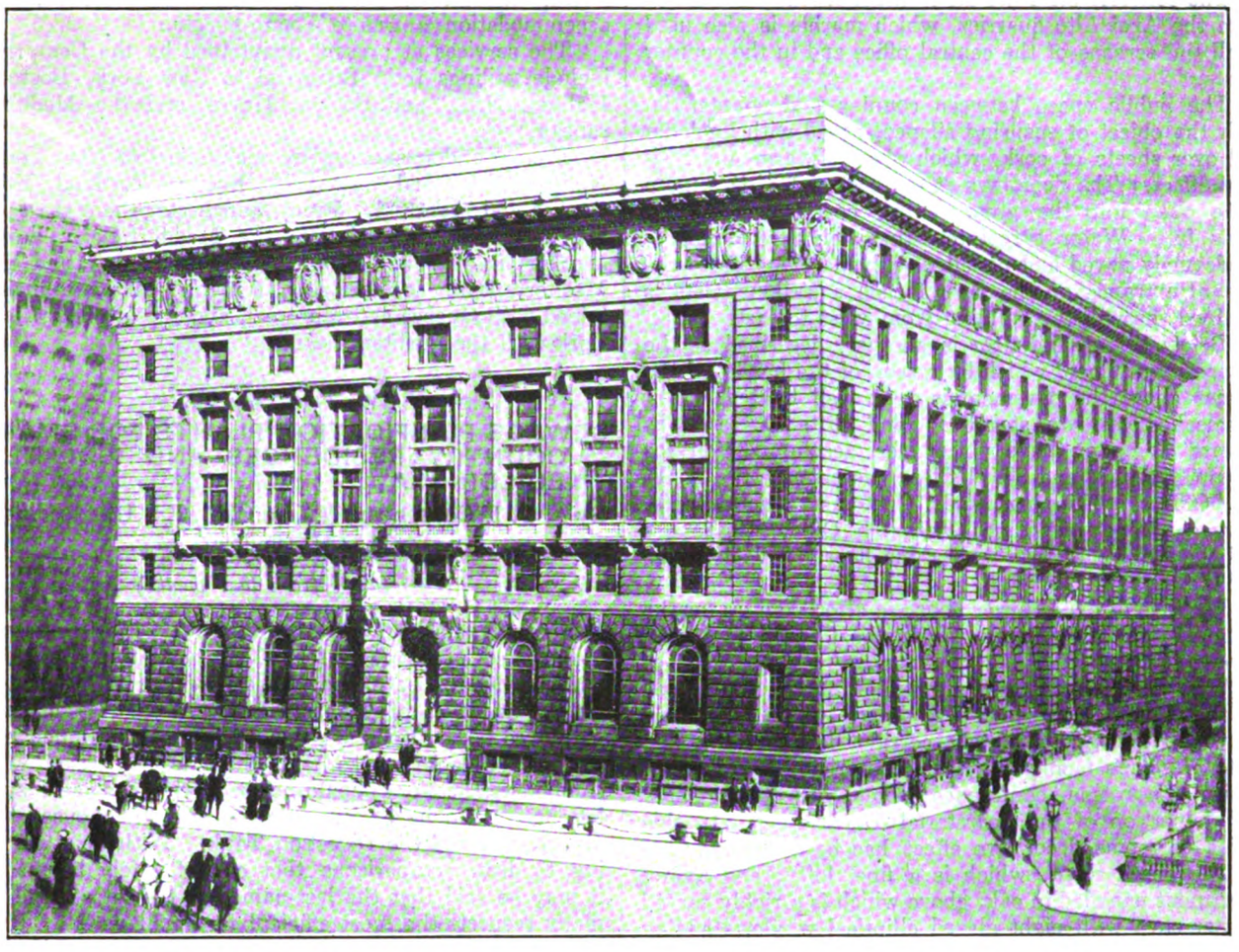
These figures do not convey so striking a suggestion of the size of the building as does the amount of floor space it contains. Below the lower ground floor, which contains 11,000 square yards, are two basements each of 12,000 square yards. Then comes the ground floor with 10,100 square yards, and floors above of approximately the same dimensions. In all, the area of the various floors is little short of 100,000 square yards, or over twenty acres. Upon such a space, and allowing comfortable standing room, it would be possible to practically accommodate 400,000 people, or more than half the population of Liverpool.

Other facts which may illustrate the size of the building are the particulars of some of the material embodied in its construction. Thus, the amount of Portland stone used is 150,000 cubic feet, weighing about 11,000 tons. The largest blocks are at the angles of the battered and rusticated ground floor wall. They weigh fourteen tons, and as they were too heavy for the electric cranes to lift, special methods had to be improvised for raising and fixing them. There are 700,000 cubic feet of concrete weighing about 45,000 tons used in the building, and there are 2,000 tons of steel bars in the reinforced concrete. Each group of stones that form the great eagles at the upper corners of the building weigh forty-three tons.

The electrical installation includes 80,000 feet or fifteen miles of conduits. The steel armoured main cable measures two miles, and its component copper wires have a total length of fifty miles. The component wires of the forty miles of light cable measure 200 miles. Bells, telephones, and clock wires aggregate twenty-one miles, and their component wires 73½ miles.

The building stands on a strong sloping rusticated base built of rough big stones. Large plain wall surfaces are broken only by the rusticated angles and the windows of the first floor. The fourth floor windows

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NEW CUNARD BUILDING, LIVERPOOL.—Messrs. WILLINK & THICKNESSE and Messrs. MEWES & DAVIS, Joint Architects.

are absolutely devoid of decoration to emphasise the greater elaboration of the parts above and below them. The building is capped by a highly decorated frieze and heavy projecting cornice with a plain coping wall. The building thus forms a united whole worthy of the position it occupies and of the world-wide interests which will be centred in it. Every appropriate design has been adopted to increase the interest of the design. Projecting doorways, rough in general outline, but with great refinement in the porticos, and heavy arched windows to the ground floor, all tend to enhance the greater detail or the finished plainness of the other parts of the building.

The carving is itself not only decorative but of great interest in the choice of subjects. The shields in the frieze on the pier head elevation call attention to the period of disturbance during which the building has been completed by bearing upon them the arms of the Allies. Great Britain and Ireland, France, Russia, Italy, Japan, Belgium, Serbia, and Montenegro are there conspicuous, and at the four angles of the building is the shield of the Cunard Company, supported on a great eagle. On the heads of the third floor windows, looking towards the river, are the arms of the principal ports of the United Kingdom, and down the sides the ancient emblems of the signs of the Zodiac, while over the doorways and on the projecting base are to be found nautical emblems, Storm and Neptune, Peace and War, Britannia, and typical faces from distant lands, such as the Negro, the American Indian, the Australian Aborigine, and others.

The general disposition of the building is absolutely simple, for entrance doorways in the centre of the two sides give access to a broad corridor from which all the offices in the building are approached, the upper ones by means of six passenger lifts and one goods lift.

The Cunard Company have their public offices on the ground floor at the river end of the building. They also occupy the whole of the fifth floor, the windows of which come directly under the cornice, and the greater part of the lower ground floor. Entrance to the Cunard office is obtained from the central hall or by the main doorway in the centre of the pier head elevation, and as the Cunard Company, as well as being owners of the building, are the principal occupants, it would be well to give in some detail a description of the portions of the building which they occupy and use.

Entering by the main doorway, that in the centre of the pier head elevation, we pass up a fine flight of steps and through a revolving door into the vestibule, which forms one limb of a cross-shaped corridor, from which everything is approached. Turning to the right, the General Manager's offices are reached, two lifts exclusively for the use of the Cunard Company giving access to the lower ground floor and the fifth floor. Turning to the left, the Saloon Passengers' Department is found, one portion of it being a sumptuous sitting-room for the use of intending travellers.

The arm of the cross directly in front of the main entrance of the building forms the approach to the general public office. The whole of this space is beautifully lined with marble, the columns being of Greek Pentelikon, the screens Italian statuary, while the floor of this cross corridor is also beautifully panelled in marble.

The Public Office, in which accommodation is provided for the General Manager's staff, Cash, Publicity, Mediterranean and Atlantic freights, and Saloon passengers, reaches from side to side of the building, and is in the centre lighted by a glazed roof which comes under one of the two great light areas. In connection with the general design of the building it might be described as a cortile roofed with glass.

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The concrete piers are all of them cased with marble from the Arni Alto quarries, which marble is also used in all the screens of the central office and in the counter fronts.

The public space between counter and counter is, with the object of ensuring silence, paved with linoleum laid over sheets of cork, which gives a warm and resilient effect. The doorways at the east end of this main office open into the great central corridor. This extends from Water Street to Brunswick Street, and is handsomely paved and panelled with marble. From the Cunard entrance on the river façade a striking vista is obtained through the building from west to east.

Below the ground floor is another, described as the lower ground floor, which by reason of the height of the former above the pavement is very well lighted. It is approached by two staircases and lifts. Here the Cunard Company have placed the accommodation for Saloon, Second, and Third Class passengers, the Medical Officer, Shipping and Customs Departments, Baggage Department, the Despatch Office, Stationery and the like, while in a mezzanine floor are cloak rooms and lavatories for the staff.

Portions of a still lower floor are also taken up for the large amount of baggage which the Cunard Company have to handle.

The three passenger lifts, which are exclusively used by the Cunard Company, give access to the fifth floor, on which is found a stately corridor leading to a fine suite of rooms facing the river, comprising board room, chairman's rooms, conference rooms, directors' rooms, and a portion of the Secretarial Department. In this series of rooms decorative effect has been concentrated on the board room, which is a fine, lofty, and roomy apartment panelled in oak, above which is a richly carved plaster cove with eight glazed elliptical windows adding to the light from the two larger windows overlooking the river. The other rooms are treated with a dignified severity strongly reminiscent of the best instances of the work of the Adam Brothers. The rest of this floor is taken up by the large accountant's offices, the secretarial staff, the Naval Architect's Department, Records Department, accommodation for lady clerks, and dining rooms for the directors and staff, and upstairs on the roof, concealed from public view by the high parapet wall surmounting the cornice, are the keeper's house, kitchens and larders necessary to supply the dining rooms, and also a large restaurant for the use of the general tenants of the building, and a certain number of private luncheon rooms for the use of the firms occupying offices in the building.

The new Cunard Building is the third series of head offices which the Line has occupied since its inauguration in 1840, when four steamers, of which the historic "Britannia" of 1,154 tons, was the pioneer, constituted the Cunard Fleet. The growing business of the Line soon necessitated removal to more commodious premises at the corner of Water Street and Rumford Street. These have remained the home of the Company until the completion of the new Cunard Building, though of late years the extended operations of the Company have required the acquisition of adjoining offices to house the augmented staff necessary to cope with the ever-increasing business of the Line. With regard to recent developments it is coincident that they should synchronise with the completion of the new Cunard Building which is a necessary corollary to these extended activities.

The first offices of the Company were at No. 14 Water Street. The development of their business, however, necessitated removal to more commodious premises, and accordingly an office block was taken—No. 8 Water Street. Subsequent expansion rendered from time to time additional office accommodation necessary, until prior to their removal to "Cunard Building" the Company occupied No. 8 Water Street, No. 12 Water Street, Nos. 1, 3, and 5 Rumford Street, which premises, though adjacent, involved inconveniences of accommodation and inter-communication.

The services at present maintained by the Company include sailings from Liverpool to New York, Boston, Halifax, N.S., and Boston, Havre, and the Mediterranean.

From London services are maintained to New York, Halifax, N.S., and New York, Boston, Portland, Me., Quebec and Montreal From Manchester there are sailings to Havre, and also to the Mediterranean, while another line is maintained between Swansea and the Mediterranean. From Bristol a regular service is maintained with Quebec and Montreal, and another links New York with the Mediterranean.

SEWAGE PURIFICATION PLANTS FOR SMALL COUNTRY RESIDENCES AND ISOLATED BUILDINGS.*

By A. P. I. COTTERELL, M.Inst.C.E., F.S.I., Assoc.Soc. M.O.H. (Fellow).

(Concluded from last week.)

THE most general type of tank is the sedimentation tank in one of its many forms. In very rare instances is it needful to use chemical precipitation, and, when it is, an adaption of the sedimentation tank is usually employed. The sedimentation tank has been much improved for large works, and there is no reason why similar modifications should not be made for small installations. We have, for instance, the Fieldhouse, the Hydrolytic, and the Digestion Tank. Without attempting to draw comparisons that cannot safely be made, it may be said that the last-named is the latest, and in many respects the most efficient for small works. It is really an old method revised up-to-date, the putrefactive solids in suspension, and some of the colloidal matter being automatically separated by passage into a digestion chamber, where it can be broken down or digested into humus without infecting the inflowing fresh sewage. It thus avoids the mistake of the septic tank in churning up everything together, or the mixing of fresh and stale sewage.

There is much to be said for the vertical flow sedimentation tank. It can sediment more quickly than the horizontal tank; it can also be arranged on sludge digestion principles even more easily than the horizontal flow tank.

The slate bed, if not overstrained, is successful, and Mr. Dibdin, its author, will long be remembered for his advocacy of aërobic, instead of anaërobic conditions for the first stage of sewage treatment. The slate bed aims at sedimenting the sewage upon the layers of slate. In the mud thus deposited, innumerable worms and similar low forms of life find their habitat, and prepare the deposit for nitrification. Aërobic conditions are essential for their life, and the sewage is therefore regularly decanted as in a contact bed.

The proper dimensions of the sedimentation tank have not been discussed. It is a matter that must be settled in each individual case when the kind of sewage is known and the position of the works and of the house respectively; but, generally speaking, it should be larger proportionately to the flow than for a town installation. The capacity also depends upon the design of the tank.

As regards filters, they are built of many different materials, most often of coke clinker, but also of broken limestone, brickbats, and coal. Gravel is scarcely suitable for the sprinkling filter, and house ashes are inadmissible. The object of the filtering medium is to obtain a large and indestructible surface area on which the nutrifying bacteria may live and do their work with plenty of interstitial air space. The film formed is similar to that obtained with activated sludge.

* A communication to the "Journal of the Royal Sanitary Institute."

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An open-sided or built-up filter is equally as efficient as a brick enclosed one; indeed, the latter must be carefully supplied with air openings, or the activity of the bacteria will be checked.

As to distributors, there are numbers of designs to choose from. There is the usual nozzle arm and the waterwheel and the trough distributor; the last is useful for small flows. The waterwheel is also good, but it has the inherent weakness of mechanism that it needs regular attention. The fixed spray distributor is not much used for small plants. All these types should be provided with dosing chambers to equalise the flow.

A favourite arrangement for a small installation is the tipper, which, when full, discharges its contents either over fixed distributing troughs or into stoneware channels bedded on the surface of the filter.

Lastly, there is the dripping plate distributor that needs no dosing chamber and can do with a minimum of fall. The liquid fills the corrugated troughs of the plates, which are laid as level as may be, and are often fed from channels at both ends. It overflows through little notches in the plate, and trickling down the underside, runs drop-by-drop off drip points on to the filtering medium. The aim is to represent rainfall as nearly as possible. If even distribution of the liquid could be ensured, the result for a small installation would be perfect: as it is, the efficiency in terms of area sprinkled is low, and there is danger of runs being formed by continuous dropping at one point. Yet even then the tray from its very simplicity is quite a favourite. In the writer's view it needs to be stronger and to be worked out more fully, and it would then be a formidable competitor of moving distributors for small plants.

It is sometimes possible to cover up the filter and to screen it entirely from view. There is no objection to this so long as the filter medium is amply supplied with air; in fact, the writer prefers to thus hide the installation of a private house. It reduces danger of smell, and a roofed building that looks like a cow-byre in a secluded dell attracts less attention than an open filter.

The contact bed sometimes used in place of the filter needs no special description. Automatic mechanism for regularly filling and emptying the beds are the best arrangement, and several makers now supply suitable apparatus.

All these filters and beds are the better for having a false door to facilitate ready discharge of the effluent. It must not be forgotten that all cavities, including the filter interstices, are a breeding place for flies. The range of such flies is not great, but it is a factor in choosing the location and type of the plant.

A filter should be of ample dimensions. The writer prefers not more than thirty to fifty gallons of dry weather flow per cube yard of filter, according to the type of works. The contact bed should roughly be double the capacity of the filter for the same flow.

Dealing now with sludge from the sedimentation tank, or humus from the digestion tank and slate bed, we come to a weak point where many plants break down. As a rule it is not possible to provide expensive apparatus, and seldom advisable if it were. It is here that sludge digestion is so appropriate, for the resultant humus is much less offensive than sludge. If the ground be suitable, sludge may be deposited in shallow channels and covered with fresh mould. In this way its moisture contents may be reduced from 90 or 95 per cent. in twelve months to 60 per cent. At the end of two years or so dependent on the kind of soil, the same area may be used over and over again, the ground being thus gradually raised. About three square yards per cubic yard of sludge, or three square feet per person per annum, will be required for sludge deposit. It may be pointed out that the humus resulting from sludge dried in this manner is valuable as a fertiliser, especially if it be from a domestic sewage.

The disposal of the effluent has already been touched upon. It is very important, for even with the most perfect system purification is not completed when the effluent leaves the filter. Dilution with a body of fresh river or stream water is good, and the dissolved oxygen of the water, if not overdosed, will readily complete the work of purification. In this connection the Royal Commission on Sewage Disposal issued valuable recommendations in their Eighth Report, which though not yet embodied in law are a useful guide to the degree of purification desirable.

Another method is to distribute the effluent over land. In some respects this is the best, for the fertilising value of the nitrates can thus be utilised. Still another method for a small plant is discharge into the ground by subdrains laid just under the surface, or even into the deeper subsoil. But for this purpose the subsoil must be porous, and it must be remembered that below four feet no nitrification is likely to take place; consequently this method should not be adopted if there are wells or other sources of water supply that must not be polluted.

Professor Gilbert Fowler has advocated the use of fish ponds for the effluent. If this course is adopted, the water must not be stagnant; in other words, there should be a sufficiency of dissolved oxygen. It should also be remembered that suspended solids are not good for fishes' gills; otherwise, they seem to enjoy a little "body" in the water.

Lastly, proper supervision is absolutely sine qua non for a successful plant. Sewage purification works will not run themselves. Automatic apparatus may reduce the labour or more constant attention, but it will never abolish it altogether, and the works can no more be safely left to run alone than a kitchen garden. Careful regulations for working, adjusted to the special plant, should be framed, some intelligent person told off and drilled into the duty, and someone above him should see that the work is done. It seems to the writer that the latter duty could well be undertaken for a whole district by some competent person for an annual fee in respect of each plant, either by the Rural Surveyor, with his Council's consent, if he be qualified, or by an engineer versed in sewage works. In this connection, results should be periodically tested and tabulated, and competition for the best management should be cultivated amongst the caretakers, either by prizes subscribed for by the owners of the plant, or by records of attainment circulated amongst them.

HORIZONTALITY AND VERTICALITY IN THE ARCHITECTURAL TREATMENT OF TOWN PLANNING SCHEMES.*

By BARRY PARKER, F.R.I.B.A.

(Concluded from last week.)

PERHAPS the development of the Gothic window demonstrates the vitality of Gothic architecture almost as well as that of the vault.

First the Gothic window was one single lancet. Next two, three or more were grouped together within an enclosing arch. Then the tympanum so formed was pierced. Next these piercings were given more complex forms, trefoils, quatrefoils, or what not. The subsequent development was a process of reducing the amount of stonework and increasing the glass area step by step, until the stone came to be merely a thin mullion line, traced in ever-varying forms on a field of glass, and ornamented with cusps and foliations.

So a living art is one developing from stage to stage, influenced by a living tradition, and gradually evolving one form from another, and ever acquiring a greater mastery over materials.

Instead of this, what have we now? Simply a

* A Paper read before the Town Planning Institute.

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harking back to this or that period of architectural history, or a series of revivals.

The Tower Bridge, which might have been a gateway to the Thames as graceful and dainty as any to a nobleman's drive, we try to make look like a mediæval fortress.

At one time we claim that if we are ever to see a living art again among us we must take up the threads of Gothic tradition at the point at which they reached their highest development. At another time we claim that the Renaissance was real and vital, that we must gather together its embers and try to make them burst into flame again.

When the Houses of Parliament and Law Courts were wanted, the stipulation was made that they should be in the Gothic style, because the former theory happened to hold the field.

When an effort is made to get a consistent treatment throughout the length of Kingsway, it is laid down that it must be in what is called English Renaissance, because the second theory has come to the fore.

The central area of a garden suburb must be Georgian, because Georgian has come to be fashionable and to be appreciated. Professor Lethaby has recently told us that a revival is almost due of the theory that to create a living art we must step back over the Renaissance and take up the Gothic threads again, and that with this John Ruskin will come back into favour.

Speaking of the English nation, Professor Lethaby says: "We seemed to have arrived at the thought of an architecture which should develop in its own sphere, and not be for ever casting back to disguise itself in the skins which it had long ago sloughed off. . . . Just as English free building had arrived came a drearier reaction and the re-emergence of the catalogued styles."

Does the designer of the latest "Dreadnought" or "Shamrock," before starting to work out his design, first consider whether it shall be Elizabethan, Jacobean, or like the "Argosy" or a Chinese junk? Yet this is exactly what the architect does.

The lines of a modern yacht are being determined by questions of speed, of the water's resistance, and efficiency generally. If we realise what is a living art, we shall find it but an easy and natural step to grasp the fact that when art was alive in other spheres the art of town-planning also lived; that this was the case in Egypt, in Assyria, in Greece, in Rome, in mediæval times and in Renaissance times.

Kahun, built perhaps 3,000 B.C. to accommodate the workmen engaged in building the pyramid of Illahun, has a real town plan.

The Greek town Selinonte, or Selinus, founded in 628 B.C., was definitely planned. Its author, Hippodamus of Miletus, is sometimes styled the Greek Haussmann. His theory was that straight and regular streets would inspire a spirit of rectitude and order. His plan for Piræus is an example of a doctrinaire paper plan imposed on a site, instead of a plan suggested by the natural features of the site.

The radiating town plan had also presented itself to the minds of the Greeks, for Aristophanes, in his "Birds," describes his "City of the Birds" as being designed by Meton, the astronomer, on a radiating plan, the market place in the centre, and straight streets leading from it in every direction, like the rays of the sun.

That there was much town planning in Pompeii cannot well be denied, though it was not built to a definitely preconceived plan, but came into existence by a gradual process of accretion. It has been claimed that much the most complete art of town planning was that practised in the Middle Ages. In fact, some claim that the mediæval town builders were the only people who ever really understood the art, that they took far more into consideration than any more formal planners ever did.

While not being able to concede all that is claimed, we still cannot deny that there was much and very much town planning in the Middle Ages.

Questions of defence alone were powerful enough to secure that mediæval towns were planned, and the value their builders attached to shelter, and also to grouping of buildings, would have done this if military considerations had not.

Rye is perhaps the best example of a mediæval town plan, remaining practically unaltered to this day, which we have in England.

Coming down to Renaissance times, we will not enter upon the vexed question as to how far the influence of the Renaissance was a good, a genuine or wholesome one, or whether it was exotic, artificial, and never really part of the life of the people. We will content ourselves with noting that at least it was strongly felt in town planning.

In Edinburgh "New Town" we have this influence in strong contrast with that of mediæval times, and in "Regency, London," we have some excellent town planning. To-day, what we do in architecture we do also in town planning. Just as architects hark back and work in some past style, so do town planners.

At one time we are obsessed with the advantages of a radial plan, at another we try to create some of the picturesqueness belonging to mediæval towns by adopting arrangements of streets and squares similar to those found in these towns. Next we are struck with the beauties of curved streets, and make plans with never a straight street in them.

Then pure formalism holds the field, and we try, and fail, to get monumental effects in a small residential suburb or village. Is our hope of infusing more vitality into our architecture largely dependent upon the vitality of our town-planning movement? I am inclined to think it is. I am not sure that if we create a town planning which is not a mere harking back, but is based upon a clear conception of the real needs of our times, there may not spring out of it an architecture which is also a simple and straightforward solution of present-day problems, and so something vital and real.

Horizontality and Verticality.

A modern plan for laying out land almost always does (and always should) presuppose that either a vertical or a horizontal feeling will preponderate in the buildings, and the whole lay-out should be influenced by the type of building expected or wished for.

Before the town planner starts to think out a lay-out for a piece of land, he must be clear in his own mind whether his plan is being prepared with a view to horizontally or vertically treated buildings.

Several things will determine this for him. Before he decides upon horizontality he must be satisfied that his client possesses, and can and will keep, the control necessary to secure success.

If this does not or will not always exist, verticality should be aimed at, and the lay-out should be made with a view to its being completed with vertically conceived buildings.

He must realise that it is only necessary that each householder is free to paint his own building whatever colour he wishes for the whole effect of a horizontal treatment to be marred.

The most successful town planning on horizontal lines has been done by great monarchs, princes, dukes, or landowners powerful enough to inflict their wishes on other people, and to secure that the results shall not be spoiled, such as the Roman Emperors, the builder of Karlsruhe, the Duke of Bedford, and the Department of Woods and Forests, or by speculative builders in a large way, such as the brothers Adam, or the Woods, of Bath.

So far as my recollection serves me, there is only one of the crescents at Bath which has not had its beauty marred by the addition of further storeys to individual houses. And how much of the charm of these crescents has gone when one discovers that most of the houses have burst out into writhing excrescences behind, which look as if they had been squeezed out of the main building, taking their cramped and distorted forms because the original design prohibited any natural expansion.

The addition of a bay here and a balcony there is enough to spoil such a crescent, and yet one cannot help feeling some sympathy for all the tenants whose natural

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desire for a balcony or a bay has had to be suppressed in the interest of architectural effect, while regretting the many instances in which it has not.

This question of subordinating the wishes of the individual to the æsthetic gain to the community is a very big one, and all I essay now is to point out that it is necessary to be sure it is possible before we attempt it, if we are not to court failure. If a man needs some additional rooms in his house, he will take some convincing that he must manage to do without them because the architectural amenities of the district demand that he should, and that his comfort and convenience are of secondary importance to these.

At least, we should notice that nothing has contributed so greatly to hopeless architectural failure in our streets as has the use of a horizontal treatment for each individual building where control has not been sufficient to secure a consistent treatment. On this I want to be very emphatic.

Practically all our streets are made up of narrow slices, cut out of what should have been long horizontally treated façades, set up side by side, differing in height of storeys, in height of whole, in fenestration, and the position of horizontal lines all thrust up one against another unrelated and unconnected.

If there are any who have not noticed this, I want them to notice it to-morrow, to compare it with a street or square in which a vertical treatment for each building has been adopted.

A feeling of verticality may be given to a whole street, even to a street in which horizontal lines preponderate, by the simple expedient of bringing the gable ends to the front; just as a feeling of horizontality may be given to a whole street, even to a street in which vertical lines preponderate, by allowing the ridge of the roof to run from end to end and the eaves to be brought to the front.

Edinburgh "New Town" is a curious example of horizontal treatment secured by public opinion. Here the leases in no way bound the lessee to conform to the prepared architectural scheme; it was merely taken for granted that he would do so. Any one builder, if he had chosen to do so, might have ruined the whole scheme. Perhaps Scotch lawyers realised that with Scotch clients the fact that a saving in architect's fees would be effected by building to the plans already prepared would be sufficient to secure their doing this. Anyway, either this or public opinion seems to have sufficed in the beginning, but one by one the buildings in Princes Street, then those in George Street, have burst their bands, and now all the formality of Princes Street and most of that of George Street has been destroyed. This has not happened so much in other parts of Edinburgh "New Town," but it is happening gradually. Into his brother's house Sir Robert Lorimer has put new windows divided into panes differing from those in the other houses in Drummond Place, and has also given the house a changed door.

Before adopting a horizontal treatment, we must be sure we shall be able both to complete it and to maintain it after it is completed.

In Regent Street, Nash's scheme was soon marred by buildings departing from it, and has stood for years a dismal, mutilated mass. Then Norman Shaw came along with another horizontal scheme, of which part was built and has stood for some time, adding to the mutilated appearance of the street an appearance of incompleteness. Before his scheme can be completed it is abandoned, and his work will now probably stand for ever, an obvious fragment of a scheme among other fragments. The question is: Would His Majesty's Woods and Forests have done better to have recognised all along that the difficulties in the way of carrying out and keeping intact a horizontally conceived scheme were insuperable even to them, with all their powers of control, and to have decided therefore upon vertically treated buildings?

A horizontal treatment of a building, especially when it carries with it symmetry of parts, seems to demand space in front of it enough to allow of the whole composition coming within the visual angle. When we come to look at such a building from a point from which we cannot see the whole, we are tempted to step back far enough to get a view of the whole. If we cannot do this, we feel there is something wrong, the effect upon the mind is unhappy. This should never be lost sight of, and I am disposed to say that where a sufficient space is not available in front of a façade to enable the spectator to view the whole façade properly, that façade should not have horizontal treatment given to it. We find this has been generally recognised sooner or later, and that where such a façade has not had such a space before it efforts have been made to secure it, though in Florence the impossibility of getting far enough away from any of the palaces to have a proper view of them produces a most unsatisfactory impression upon the mind.

In Dublin we can scarcely find an instance of a horizontally treated building placed where we cannot view it properly. The spaces in front of the Parliament House (now the Bank of Ireland) and of Trinity College and of the Post Office are large enough for this. The Custom House and Four Courts may be viewed from across the river, as they stand on the embankment, but in many London and Edinburgh squares the desirable view point is within the central gardens, and so is inaccessible to the general public.

Dublin affords us examples of another difficulty, however, which emphasising the horizontal brings.

A building may have space enough in front of it to allow of its being viewed from a sufficient distance: the front is therefore designed to be so viewed, but the sides are in narrow streets, and are altogether out of scale and character with narrow streets, if they are in scale and character with the main façade, yet the flanks can be seen in conjunction with the front.

Again, parts of many buildings must necessarily be seen as terminations to street vistas. If these buildings are horizontally treated, the parts of them so seen may be central or other features sufficiently complete in themselves to look right when so viewed; but it often happens that parts so seen present a very incomplete appearance if they have strongly marked horizontality. Certainly no glimpses of a Gothic church down such a street vista ever seems to cut athwart our picture, as a horizontally treated building often does under similar conditions. Not only should such things as I have enumerated influence our choice between horizontality and verticality, but we often find that the levels of the site alone are enough to determine it.

For horizontally conceived buildings we should have a site either level or on a horizontal line running round a hill. Such buildings cannot be happily placed on the sides of a street which runs uphill.

At least we must admit that one of the most noticeable things in modern work is that many of our best architects are adopting a markedly vertical treatment for individual buildings coming between other buildings over which they have no control.

Can it be that we are doing something towards creating a living art for our generation by, instead of first deciding on one of the "catalogued styles" of architecture for a Town Planning scheme, taking at once a broader view, and deciding this question of horizontality or verticality?

1ST LONDON ENGINEER VOLUNTEER CORPS.

THE 1st London Engineer Volunteer Corps has been formed by the amalgamation of the E.I.V.E. Corps with the 4th Battalion Central London Regiment (Architects' Corps) and the L.C.C. Training Corps. The three Corps have now, in accordance with the wish of General Sir O'Moore Creagh, become an Engineer Corps; with the exception of the Post Office Engineering Volunteer Training Corps (which is composed of Civil Servants), it is the only Engineering Corps in the Metropolitan area.

The Corps has offered its services under the Volunteer

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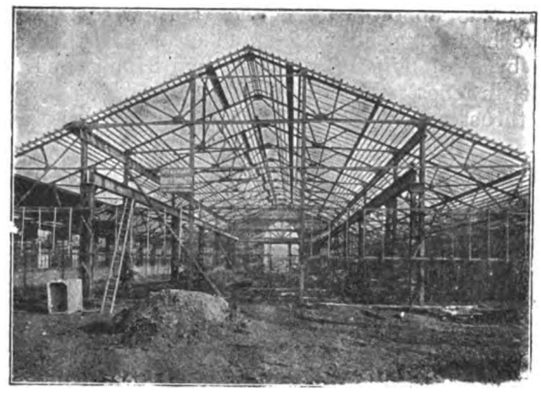
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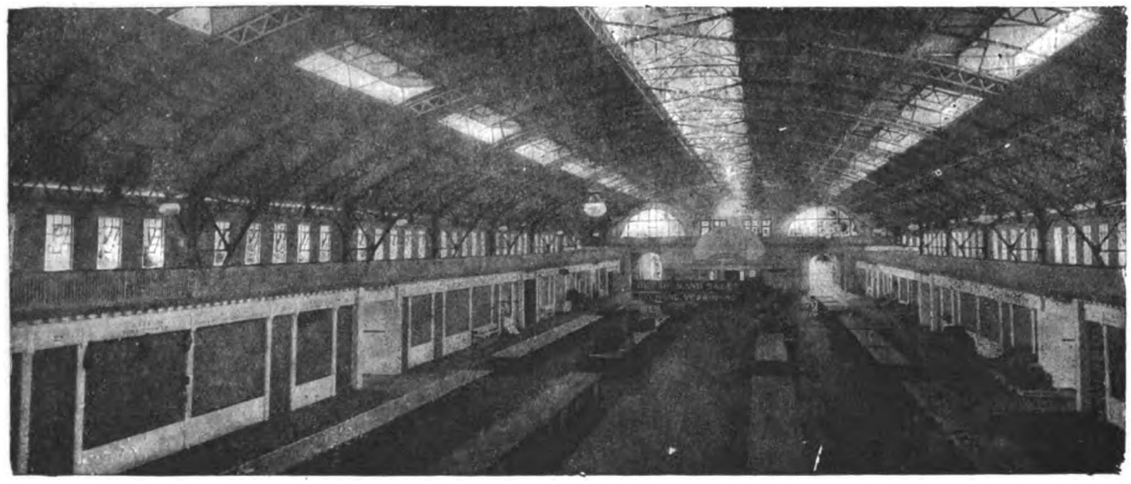
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Act of 1863, so that in future all members will be required to take the oath of allegiance.

They would only be compelled to come out for service for the purpose of repelling an enemy in the event of an invasion being imminent. Needless to say, if that event should come to pass, business would stop and every patriotic citizen would assist in driving the enemy into the sea.

Men who are not enrolled under the Volunteers would not be able to take an active part in the service of the country, but would be liable for non-combatant duties.

When called out the Volunteers would be soldiers under the Act already mentioned, and would be entitled to pay, &c., as Regular soldiers.

Should a Volunteer find, through change in circumstances, he is unable to continue in his Corps, he may, except on actual military service, quit the Corps by giving fourteen days' notice in writing, and fulfilling a few other simple requirements.

Volunteers who are in a position to undertake special military duties without being withdrawn from their ordinary occupation, may be employed to relieve and assist Regular troops, or for other services, the work being arranged on a rota system. When employed under these circumstances, they will have the position and privileges of soldiers.

From this it will be seen that every man who is not actually employed with the Naval or Military Services, and including all men who may be employed on munition or other war work, should join a Volunteer Corps, so that their services can be made use of in case of necessity.

Full information with regard to the above Corps can be obtained from the Adjutant, Chester House, Eccleston Place, Victoria, S.W.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

The Whistler Memorial.

SIR,—Inquiries having been made regarding the memorial to J. M. N. Whistler by M. Auguste Rodin, organised by the International Society of Sculptors, Painters, and Gravers, the Committee of the memorial wishes to communicate to you the last letter received from M. Rodin, dated April 13, 1916:—

"Le Monument Whistler était presque fait lorsque la guerre est venue, et je n'y ai plus travaillé. C'est la première chose que je vais faire sitôt que je serai un peu libre. Je ne peux répondre à vos souscripteurs en ce moment, mais six mois après la guerre terminée, le monument pourra se mettre à Londres. Ces six mois, je les compte pour la fonte du bronze, risque à rectifier de quelques mois. AUG. RODIN."

The entire sum required for the Memorial has been collected, invested, and placed in the hands of trustees.

Yours, &c.,
WM. HEINEMANN.
JOSEPH PENNELL.
Hon. Secs.

3 Adelphi Terrace House, Robert Street, Strand, London, W.C.

Board of Trade Figures and Others.

SIR,—One is pleased to observe that after months of controversy your correspondent, who writes over the name of "Philadelphian," has appreciated the fact that there is no compulsion to report cases of non-fatal lead sickness among house painters, and that, therefore, as the recent Report of the Departmental Committee on the Use of Lead Paints states, "there are no reliable statistics" of such cases.

No one is likely to regard "Philadelphian's" own attempts at working out the number of cases, even with his "critical expert knowledge of the facts," as anything but a sheer guess; on the other hand he makes two statements of fact which are curiously misleading, and are worth contradicting:—

1. He states that "it is admitted that on an average painters' lives are shorter by eight years than all males." This statement is apparently based on the report of the evidence of Dr. Collis, page 46 of the Departmental Committee's Report. Dr. Collis (not the Departmental Committee) states that in the case of two trade societies the median age at death which Bowley in his book, "Elements of Statistics," regards as the most useful form of average ". . . is eight years lower than it is for all males," and says that "these conclusions agree almost exactly with the corresponding deduction from the Registrar-General's figures." In the first instance it should be made clear that this deduction is not a statement of the Registrar-General's, it is merely a calculation made by Dr. Collis. In the second place Mr. Bowley nowhere in his book says that the median age at death is the most useful form of average. No one who was not ignorant of the most elementary principles of vital statistics could use such an average without regard to the age distribution of the sections of the community which are compared. The following instance will demonstrate this fallacy. The population of almshouses would yield a high "median age at death," because they are usually composed of old people, while the undergraduate population at Oxford would yield a low "median age at death." It is obvious that a comparison between the two populations, ignoring age distribution, would lead to the ridiculous inference that the incidence of mortality among the undergraduates of Oxford is much higher than in almshouses. This presumably is the sort of thing that is meant when people say that statistics can prove anything. They can be made to appear to prove anything, however ridiculous, unless all the necessary factors are taken into consideration.

The second statement is that "out of every 100 deaths among painters about thirteen or fourteen are due to lead poisoning." This is again a quotation from Dr. Collis (not the Departmental Committee), who makes this statement in regard to the members of two trade societies. When reports of these are looked at, it is found that they merely give a report of deaths with the age at death. There is no adequate record of the *numbers* exposed to the risk of death at each age or at any group of ages, and in default of this no accurate comparison of death rates is possible.

The fact is that so far from either of these statements being "admitted," they are among the most glaring instances of the notoriously amateur statistics which were presented to the Committee.

If "Philadelphian" will condescend to bring his "critical expert knowledge" to bear upon the figures of the Registrar-General, he will find a much more accurate view of the rates of death among house painters on page 182 of the 1908 Supplement:—

	Comparative Mortality Figures.
(1) All occupied males, industrial districts .	1,122
(2) All occupied males, London	1,099
(3) Group 64—Painters, plumbers, glaziers .	1,041
(4) All occupied males, England and Wales .	925

Thus it may be seen that the mortality of Class 3 (of which the vast majority are house painters) compares well with the mortality of all occupied males in the industrial districts, and even with that of all occupied males in London, although that group contains large numbers of professional men not subject to the most ordinary trade risk. Indeed, the comparative mortality of painters is only very slightly more than that of all occupied males in England and Wales.

From the Registrar-General's Returns "Philadelphian" may also find that at all ages between fifteen

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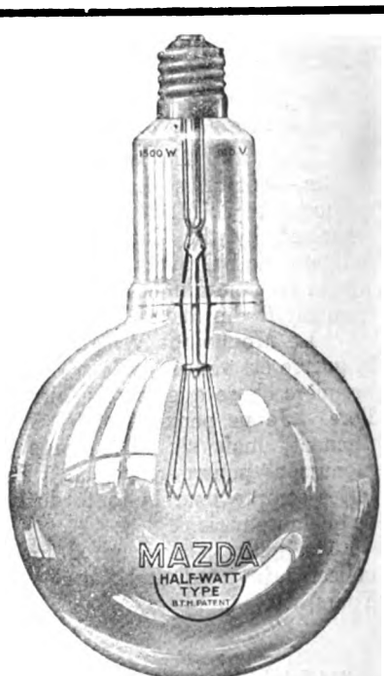
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and fifty-four the mortality among painters is lower than that among all other industrial occupations.—Yours, &c.,

ENGLISHMAN.

London: June 10, 1916.

Enlistment of Architects.

SIR,—My son, who is adjutant of the 23rd Battalion London Regiment, writes to me from France to say that his Commanding Officer is very pleased to hear that married architects have been invited to enlist in this Battalion, and that they may be sure of a hearty welcome should they come to France.—Yours, &c.,

June 12, 1916. ERNEST NEWTON.

ARCHITECTS AND MILITARY SERVICE.

THOSE of our readers who are liable to be called up at immediate notice under the Military Service Act, will be interested to learn that arrangements have been made for the formation of a company of architects and surveyors in connection with the 22nd (Reserve) Battalion King's Royal Rifle Corps. This regiment was one of the four mentioned in our issue of June 2 as being willing to receive members of the R.I.B.A. and other architects. It need hardly be pointed out that it is of great advantage to recruits to be able to join a company composed of men of their own class, military life under such conditions being much more pleasant. Lieutenant and Quartermaster H. G. James (with the permission of the commanding officer, Lieutenant-Colonel L. Whitehead) has the arrangements in hand for this battalion of the King's Royal Rifles, and readers desirous of joining the new company should communicate with him at Norfolk House, Laurence Pountney Hill, Cannon Street, London, E.C. It is necessary to make immediate application. The duties of the battalion are largely in connection with field engineering. The training-ground is at Wimbledon.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BEDFORDSHIRE.

Bedford.—Converter House, Queen's Engineering Works: alterations, for Messrs. W. H. Allen, Son & Co.; also

Nos. 49 and 51 Hurst Grove: alterations.

Offices, &c., St. Leonard's Saw Mills: extension, for Messrs. Astell Brothers.

BUCKINGHAMSHIRE.

Beaconsfield.—House, Curzon Avenue, for Mr. E. H. Goodyear.

ESSEX.

Braintree.—Ten pairs of cottages, Chapel Hill, for Mr. E. Valentine.

Power House, for the Crittall Manufacturing Company.

Romford.—Factory, Mawney Road, for Mr. H. N. Brook.

Tilbury.—150 Council houses.

Refuse destructor.

DURHAM.

Jarrow.—Premises, Railway Street: alterations, for Mr. R. C. Brown. Messrs. Marshall & Tweedy, architects, 17 Eldon Square, Newcastle-on-Tyne.

HERTFORDSHIRE.

Letchworth.—Cottage, Broadway: addition, for Mrs. Pearson.

Lacre Motor-car Factory, Works Road: extension.

House, Baldock Road, for Mr. Holden.

House, Sollershott West: additions, for Mr. H. Bond Holding.

Preston.—Cottage, Tatmore Place, for Mr. J. C. Priestley.

KENT.

Ramsgate.—Ramsgate Brewery: addition, for Messrs. Tomson & Wootton, Ltd.

No. 15 Albion Place: alterations, for Mr. Dicker.

LANCASHIRE.

Blackburn.—Mill, Grange Street: extension, for Messrs. Birtwistle & Fielding, Ltd.

Blackpool.—Dining-room, &c., Ashburton Road, for Messrs. J. Fielding & Sons.

Garage, Whitegate Drive, for Mr. M. Pollard.

Garage, Layton Lane, for Mr. C. Brierley.

Two houses, Holmfirth Road, for Mr. W. Squelch.

Two shops, Waterloo Road. Mr. J. Whiteside, builder, 43 Buchanan Street.

Golborne.—The "Queen Anne" Inn: alterations.

Lancaster.—Three houses, Ardengate. Messrs. Thompson & Morris, builders, 13 Dalton Square.

Offices, King Street, for Messrs. W. Huntington & Sons.

Rochdale.—Mill, Spotland: additions, for Messrs. Charles Whittaker, Ltd.

LEICESTERSHIRE.

Hinckley.—Factory, Lower Bond Street: additions, for Messrs. Atkins Brothers.

House, Stoke Road, for Mr. A. Tomlin.

Loughborough.—Proposed engineering works, Great Central and Windmill Roads, for Herbert Morris, Ltd.

LINCOLNSHIRE.—

Lincoln.—Boiler shop, Firth Road: extension for Messrs. W. Foster & Co., Ltd.

Testing shop, Firth Road, for Messrs. Ruston, Proctor & Co., Ltd.

MIDDLESEX.

Chiswick.—The "Pack-horse and Talbot" p.h., High Road: alterations.

NORTHAMPTONSHIRE.

Corby.—House, for Messrs. Lloyd's Ironstone Company.

NOTTINGHAMSHIRE.

Mansfield-Woodhouse.—Two houses, Morven Avenue, for Mr. C. H. Hill.

House, Forest Town Smallholders' Estate, for Mr. H. C. Cooke.

SURREY.

Ashtead.—Three pairs of cottages, Albert Road, Dene Estate. Messrs. Cropley Brothers, Ltd., builders, High Street, Epsom.

Cobham.—"Green Court": additions, for Miss Husband.

Guildford.—Sawmill, Leas Road, for Mr. E. Miles.

Works, Woodbridge Hill: offices, &c., for Messrs. Dennis.

WORCESTERSHIRE.

Cookley.—Two houses: additions, for Mr. C. T. J. Beeston.

YORKSHIRE.

Dewsbury.—No. 2 Westgate: alterations, for Hunters, Ltd.

Electric sub-station, Bridge Street, Savile Town, for Messrs. James Frame & Sons.

Works, Thornhill: extensions, for the Yorkshire Electric Power Co. (£100,000).

Leeds.—Stabling, New Road Side, Horsforth, for Leeds Industrial Co-operative Society, Ltd.

Middlesbrough.—The Constantine Technical College (£80,000).

Normanton.—House and shop, Lee Brigg, Altofts, for Mr. E. H. Hudson.

Thurnscoe.—Proposed W.M. Church.

SCOTLAND.

Aberdeen.—Offices, York Place, for Messrs. Hall, Russell & Co., Ltd. Mr. A. H. L. Mackinnon, A.R.I.B.A., architect, 245 Union Street.

Premises, Spring Garden: additions and alterations, for Messrs. W. McKinnon & Co., Ltd. Mr. G. Coutts, architect, 22 John Street.

Nos. 77 and 79 Crown Street: alterations, for Messrs. Mackenzie & Wilson. Mr. W. J. Devlin, A.R.I.B.A., architect, 156 Union Street.

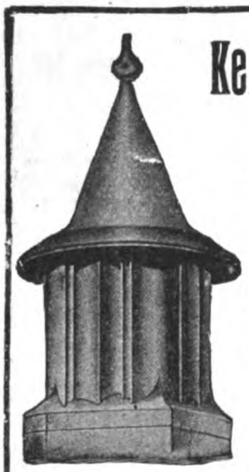
Stable, Wellington Street, for Mr. A. Walker. Mr. J. Rust, architect, 224 Union Street.

Phœnix Works, Russell Road: petrol Store, for Messrs. W. Riddell & Co.

Dundee.—Boiler house, Byron Street; also alterations to warehouse, West Street, for Messrs. F. Stevenson & Sons.

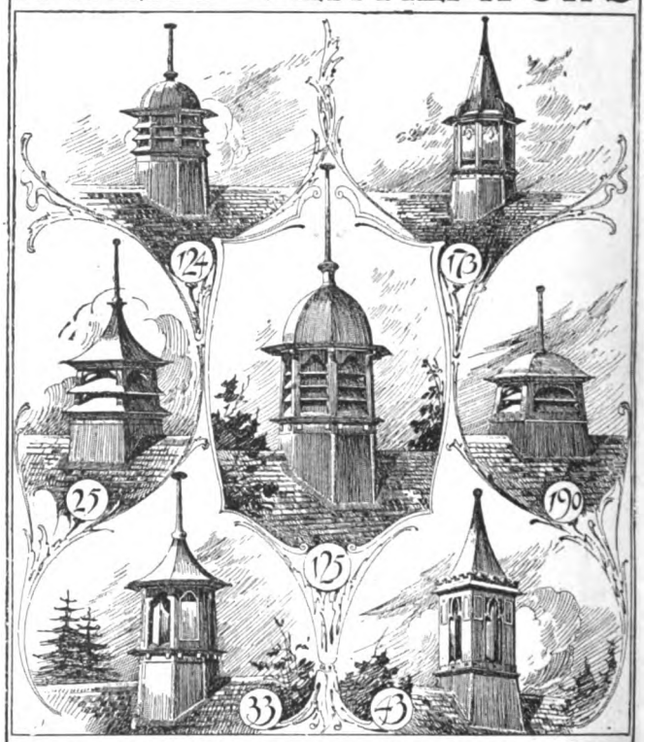
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THE ARCHITECT

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FORTHCOMING EVENTS.

Thursday, June 29.

Institution of Municipal and County Engineers : Annual General Meeting at Blackpool. (Three days.)

Edinburgh Architectural Association : Luncheon to Sir R. Rowand Anderson, LL.D., R.S.A., at the Caledonian Hotel, at 1.15 P.M.

ENGLISH MURAL MONUMENTS AND TOMBSTONES.

UNTIL the nineteenth century the design of memorials to the departed may be said to have been practically universally associated with artistic invention in this country, and particularly is this remarkable in the examples of those centuries, the seventeenth and eighteenth, nearest to us in point of time and therefore, naturally, most prolific of still existing examples. The study of these has proved a source of both pleasure and profit to many of those who are interested to observe the evidences of the art and craft of bygone workers.

It is impossible to believe that the banality characterising the memorials erected in our cemeteries and churchyards during the last century has been the result of a decadence in the power and ability of designers without the concurrence of a decline in the taste and appreciation of the public. It is not that the artistic craftsmen who fashioned the headstones and the mural tablets of the eighteenth century became an extinct race that is responsible for the evolution of the atrocities of the nineteenth, so much as a readiness to accept, on the part of survivors, such unworthy memorials to their departed as the monumental masons chose to supply.

Therefore every and any attempt that can be made to arouse to an appreciation of artistic quality the perception of those who pay for memorials is, especially at the present time, a subject of satisfaction to all who would see the rescue of everyday art from the obscurity to which it had been relegated by the obtuseness of the nineteenth century. The efforts of the Civic Arts Association in one direction have been happily seconded in another by the excellent discrimination and enterprise of Mr. Herbert Batsford, who has now produced as an educative influence on the public taste a valuable selection of examples of the work of the seventeenth and eighteenth centuries in his recently published volume* on "English Mural Monuments and Tombstones."

Particularly is this publication of value in that it avoids the more costly and elaborate class of public memorials, and is limited in its selection of the examples illustrated to the more modest form of private memorials in the work of the seventeenth and eighteenth centuries, which, however, provide a rich variety of simple monuments, carefully conceived on architectural lines, yet not too ambitious to be beyond the reach of those who desire the simplest kind of memorial.

Although the work of past ages as displayed in monuments is notable for a wealth of artistic invention and imagination, it is not difficult to classify in groups the leading types of the later English mural monuments and tombstones. First, we may take the group of inscription-panels, those mural monuments of modest character in which the composition consists of an inscribed tablet, enclosed in an architectural frame. These Mr. Godfrey arranges in four classes: first, the panels within a simple carved or moulded frame tending in the later examples to add certain architectural features; second, the projecting panels, the framework of which recedes towards the face of the wall (these, being generally rather severe in their treatment, are unobtrusive, yet they are among the most successful of the mural tablets); third, the more elaborate architectural compositions, flanked by columns or pilasters and forming delightful exercises in a constructional art used decoratively; fourth, those composed entirely of various forms of the cartouche.

The next group consists of that compromise between the wall tablet pure and simple and the standing monument, and is represented by larger wall monuments resting on the ground, thus affording space for lengthy inscriptions. We style this group as a compromise because it may be regarded either as a wall tablet extended to the floor or as a standing monument attached to a wall.

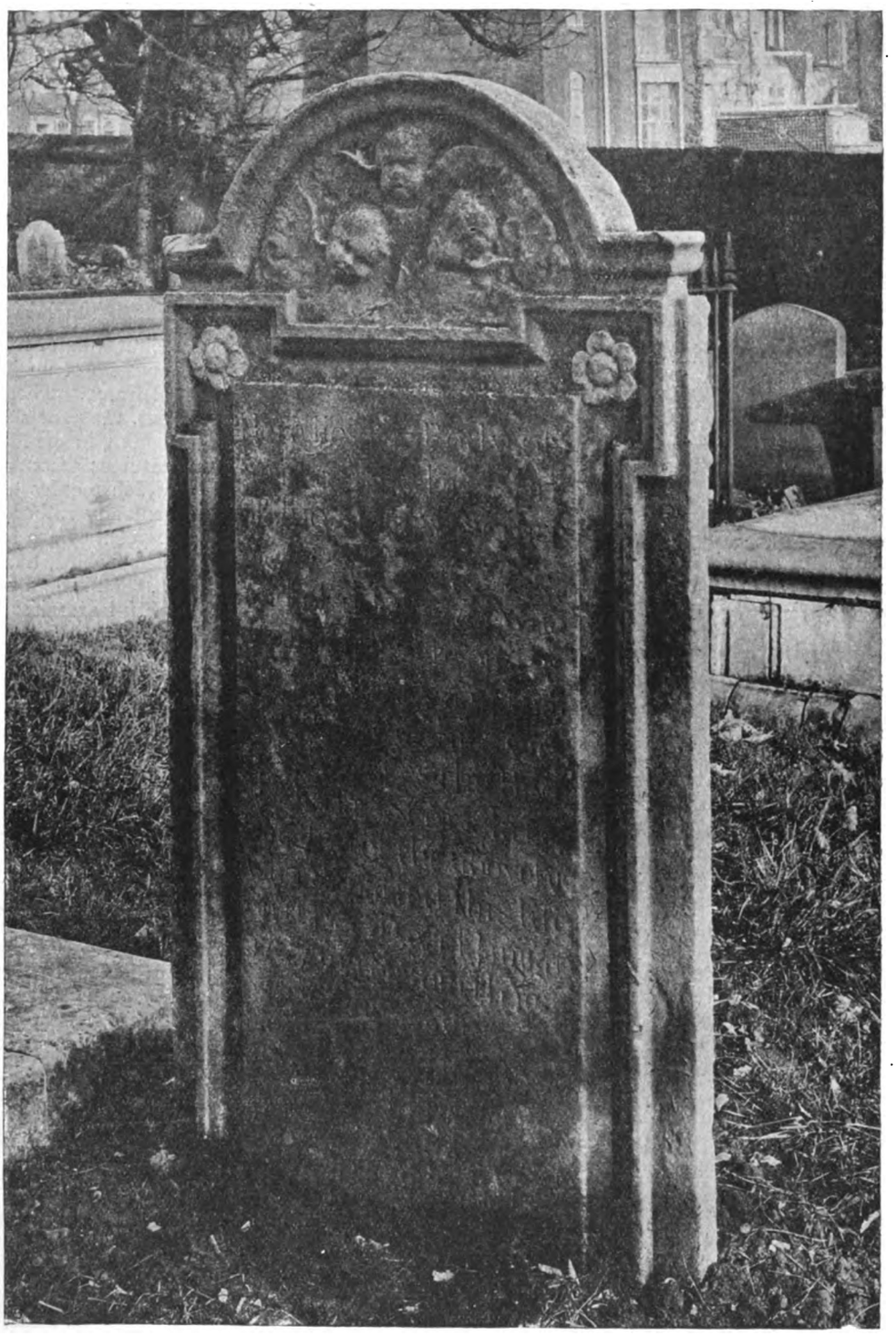
Although the first two groups occasionally embrace examples attached to external walls, yet the great majority are found internally, and they may therefore be taken as normally interior types. Before passing to the groups which are principally used outside a church we may note the group of floor slabs, the post-Reformation successor of the mediæval slab with brasses let in. The floor slab was very popular in the eighteenth century and usually was made of marble or hard stone, with deeply incised lettering, usually adorned with a medallion containing a shield of arms, often with its crest and mantling. In Sussex we have several examples of such slabs in cast-iron during the period when that part of the country was the seat of a flourishing iron industry.

Our next group is that of table tombs, the post-Reformation descendant of the altar tomb and the sarcophagus of mediæval Christendom. When simple in outline they are equally suitable for the interior of the church and for the churchyard, although the limits of space will preclude their frequent repetition in the former. Hence this group includes the most satisfactory form for the more important memorials in the churchyard, as they have a greater permanence due to their size and construction, and they furnish more opportunity in their sides and their covering slab for longer inscriptions and varied heraldic adornment. Many of the finest memorials erected in churchyards during the eighteenth century are included in this group, particularly in the stone districts of the country, such as the Cotswolds, where the local material has enabled the local craftsmen to use their beautiful stone to the greatest advantage.

Finally, we come to the headstones, and here again the plenitude of examples is found in those districts which are the locale of good and durable building stone. It is particularly in the headstone group that we see the great superiority in design of the memorials of the past to the productions of the cemetery mason, who runs his business as a trade, supplying the market with the work of his unrecognised "hands" as distinguished from the loving efforts of the artist-craftsman.

* "English Mural Monuments and Tombstones." A collection of eighty-four photographs of wall tablets, table tombs and headstones of the seventeenth and eighteenth centuries; the subjects specially selected by Herbert Batsford as representative examples of the beautiful and traditional types in the English parish church and churchyard, for the use of craftsmen and as a guide in the present revival of public taste; with an introduction by Walter H. Godfrey, F.S.A. (London: B. T. Batsford, Ltd. 12*s.* 6*d.* net.)

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[From "English Mural Monuments and Tombstones."

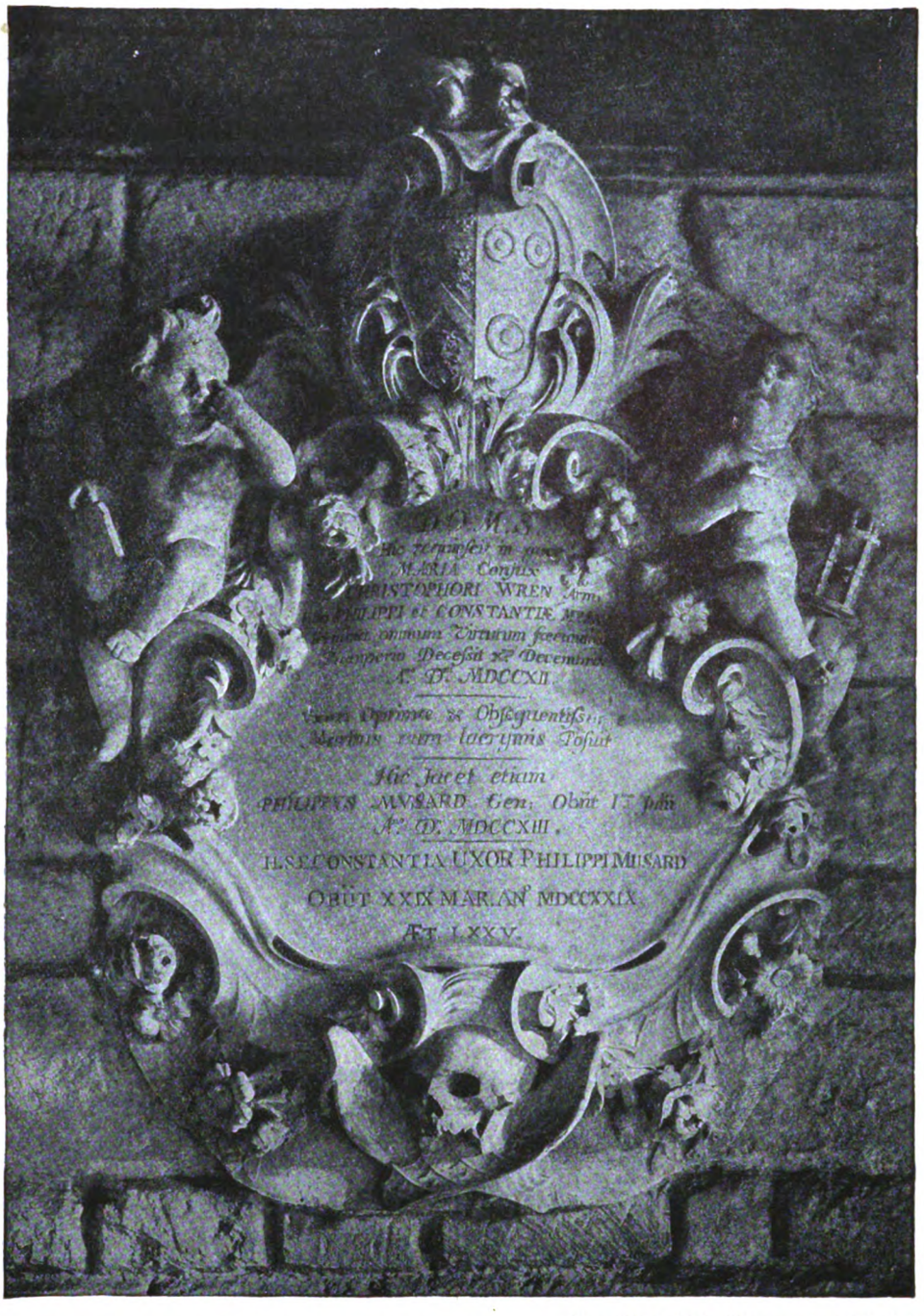
HEADSTONE AT HAMPSTEAD, MIDDLESEX.

True that the eighteenth-century headstones rely for their decoration to a very large extent on variations in the use of winged heads of cherubs, skulls and crossbones, and other emblems of mortality, with, in smaller measure, representations of the Day of Judgment, which, though reflecting the sentiment of their day, would seldom now be viewed with favour. But we may still find that in their outlines and in their use of architectural ornament and forms, infinitely varied in their application, there is a wealth of suggestion for an immense and illimitable improvement on the stock patterns of the modern cemetery mason.

The headstones of the eighteenth century show us how an artistic memorial can be evolved by decorative forms in a single plane, whilst the mural monuments or wall tablets rely very largely for their effect on the employment of architectural forms en échelon. It is clear that the men who designed them were thoroughly well versed in the minutiæ of architectural detail, in the employment of which they displayed not only fertility of invention, but a remarkable sense of propriety and suitability. However fanciful may appear the combinations, there is in the well-selected examples put before us by Mr. Batsford no hint of incongruity in the components employed in any particular instance. Nor need we suppose that the instances chosen by the compiler of the book now before us display this satisfactory character only by reason of the good taste of their selector. On the contrary, it is one of the merits of Mr. Batsford's production that the examples he has chosen are essentially typical and it would be easy to find hundreds of others equally satisfactory.

By the courtesy of the publishers we are able to reproduce a few specimen examples of the admirable illustrations which render the volume a most valuable epitome of the art and craft of the seventeenth and eighteenth centuries as displayed in "English Mural Monuments and Tombstones."

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[From "English Mural Monuments and Tombstones."

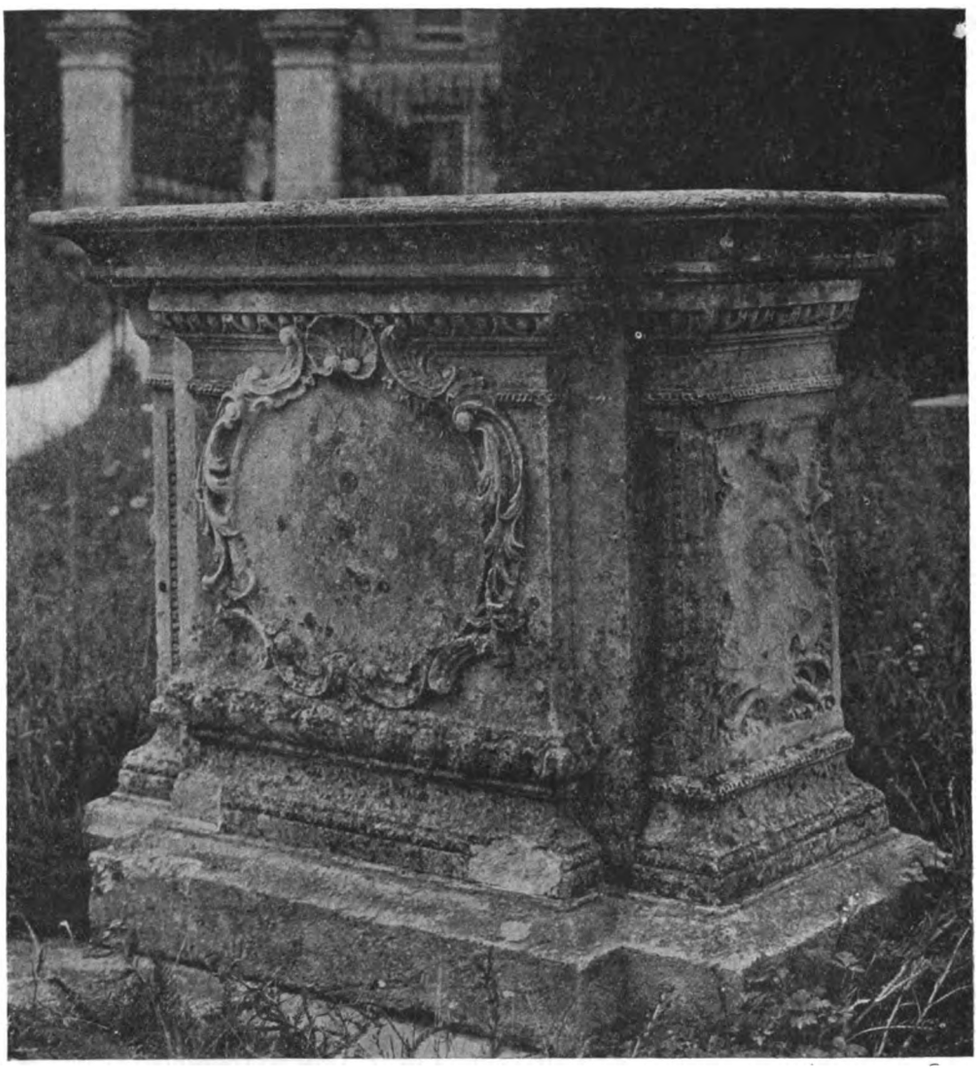
MONUMENT ERECTED BY SIR CHRISTOPHER WREN TO HIS WIFE: CRYPT, ST. PAUL'S CATHEDRAL, LONDON (1712).

NOTES AND COMMENTS.

THE protest of Sir Aston Webb in the "Observer" against the Bill permitting the strengthening of Charing Cross railway bridge is this week supported by Mr. Reginald Blomfield, R.A., Mr. Ernest Newton, A.R.A., Mr. W. R. Lethaby, and, our irrepressible friend when public service is to be done, Mr. Wm. Woodward. We need hardly repeat their arguments, which are very much those already appreciated by our readers, but it is desirable that everyone who desires to avoid the perpetuation of the "oxide Behemoth" should use any influence possessed, even though it be no more than that of a constituent on his parliamentary representative, to scotch the Bill in the House of Commons. At the same time it is important to consider and, if possible, demolish the strong points in the case of the promoters of the Bill, which are thus put forward by the General Manager of the South-Eastern and Chatham Railway: "No suggestion has been forthcoming from the opponents of the Bill which will provide for the daily traffic (principally working men) during (1) the two years after the war in which the County Council propose to consider the question of the improvement; (2) in the period after that during which plans have to be prepared and property purchased; and (3) during the erection of the bridge and new station."

The evil results of a short-sighted commercial policy in displacing native materials by foreign is well exemplified in the present condition of the granite-working industry in Aberdeen. For the sake of extra profit importers have favoured the use of Norwegian granite to such an extent that to-day, it is stated, the splendid native quarries are unable to supply enough material to keep employed the men who, until the war, were working foreign granite. This imported material is now barred by the action of the Board of Trade in support of the country's necessity for economising tonnage in the import of foreign goods. The Aberdeen Granite Association, the importers of Norwegian granite, having ruined the local quarrying industry, are now using the United Aberdeen Masons' and Granite Workers' Union, the trade society of the operative granite workers, as a lever to induce the Government to allow a

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[From "English Mural Monuments and Tombstones."
TABLE TOMB IN PAINSWICK CHURCHYARD, GLOUCESTERSHIRE.

continuance of the importation of Norwegian granite, and so save the situation for the importers. Surely the proper course is to revive the granite quarries of Scotland rather than to send British money abroad to lower British credit and increase the cost of British food and absolute necessaries by adding to the overwhelming charges for freight.

We have already referred to the efforts of the British Engineers' Association to organise the engineering trade for more successful competition with foreign rivals. The Association already includes over 300 firms, with a combined capital of over £100,000,000, and during the war, which is above all things an engineers' war, it claims to have been of considerable service to the Government. One inevitable result of the work put on the engineering shops by the war has been the dislocation of the pre-war trade, and it is felt that the serious problems which will face the industry when war is over can only be solved by the ablest brains in the trade. Chemical manufacturers have already established an Association for the organisation of their trade during and after the war, and the representation of the views of the trade to responsible Government Departments. The British Engineers' Association feels the same necessity for mobilisation, hence its present appeal for combination on a large and effective scale to secure a national policy which will conserve and foster British engineering. The President of the Association, Mr. Wilfrid Stokes, inventor of the Stokes gun, and the Chairman of the Executive Committee, Mr. John Thornycroft, have just issued an appeal to all engineering firms to become members of the Association. This appeal claims, among other objects attained by the Association during the war, that the difficulty of knowing which firms in England are under enemy control (owing to the absence of a Government black list) has been met to some extent by a carefully prepared list, available for members of the Association, of firms so tainted. It is pointed out that the war has revealed enemy controlled trade situations which were never even guessed at in peace times, and that if the industry is to prosper after the war, more particularly in relation to exports, co-operation and co-ordination are absolutely necessary. All the members of the Association must be entirely British in their interests. One of the main objects on the immediate programme of the Association is to urge the Government to place the industry in a position to compete successfully with enemy countries after the war, and not hamper it with legislation or handicap it with conditions. It also desires to discourage the existence of enemy manufacturing and agency concerns in Great Britain, and to encourage technical education and an appreciation of scientific investigation. The offices of the Association are at 32 Victoria Street, Westminster.

The Advisory Council for Scientific and Industrial Research has already appointed Standing Committees on Mining and on Engineering.

The Standing Committee on Mining includes the following members nominated by professional associations: Institution of Mining Engineers—Sir William Garforth, Dr. John Haldane, F.R.S., Dr. R. T. Moore, Mr. Wallace Thorneycroft; Institution of Mining and Metallurgy—Mr. Edward Hooper, Mr. Edgar Taylor; Iron and Steel Institute—Professor H. Louis; the South Wales Institute of Engineers—Mr. W. Gascoyne Dalziel; and the following members appointed directly by the Advisory Council: Sir Hugh Bell, Mr. Hugh Bramwell,

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Lieutenant-Colonel W. C. Blackett, Professor Cadman, Professor Frecheville, Mr. Bedford McNeill, Mr. Hugh F. Marriott, Sir Boverton Redwood, and Mr. C. E. Rhodes. The Advisory Council have appointed Sir William Garforth to be Chairman.

The Committee is divided into two sections, as follows: Section on the Mining of Iron, Coal, and Hydrocarbons—Sir William Garforth (Chairman), Sir Hugh Bell, Mr. Hugh Bramwell, Lieutenant-Colonel W. C. Blackett, Professor Cadman, Mr. W. Gascoyne Dalziel, Dr. John Haldane, Professor Louis, Dr. R. T. Moore, Sir Boverton Redwood, Mr. C. E. Rhodes, and Mr. Wallace Thorneycroft. Section on the Mining of Minerals other than Iron, Coal, and Hydrocarbons—Mr. Edgar Taylor (Chairman), Sir Hugh Bell, Professor Frecheville, Mr. Edward Hooper, Professor Louis, Mr. Bedford McNeill, and Mr. Hugh Marriott.

The Standing Committee on Engineering includes the following members nominated by the professional associations: Institution of Civil Engineers, Sir Maurice Fitzmaurice; Institution of Electrical Engineers, Mr. J. S. Highfield; Institution of Mechanical Engineers, Dr. Dugald Clerk, F.R.S.; Institution of Naval Architects, Sir Archibald Denny; North-East Coast Institution of Engineers and Shipbuilders, Mr. Herbert Rowell; Manchester Association of Engineers, Mr. Alfred Saxon; Institution of Engineers and Shipbuilders in Scotland, Mr. James Brown; and the following members appointed directly by the Advisory Council: Mr. F. R. Davenport, Mr. Alfred Herbert, Professor Bertram Hopkinson, F.R.S., Mr. C. H. Merz, Mr. V. L. Raven, Mr. A. A. Remington, Mr. G. Gerald Stoney, F.R.S., Mr. Douglas Vickers, and Professor Miles Walker. The Advisory Council have appointed Sir Maurice Fitzmaurice to be Chairman.

At the first meeting of the Standing Committee on Engineering, Sir Maurice Fitzmaurice, in his opening statement, referred to several important aspects of the Government scheme as issued in July 1915, and directed attention in particular to the necessity for securing that British industries shall get as large a share as possible of the full value of the results of any successful researches and shall retain at least the initial advantages derived from them. He felt in this connection that the Committee would be in a position to advise the Government organisation for research as to the means of securing that their operations should yield the maximum benefits to the trade and industry of the Empire. Applications for aid must be dealt with on as broad lines as possible, without red-tape and with a constant regard to the ultimate object of the Government scheme, which is to help the industrial community of the Empire in the contest with the common trade enemy. It would be of great value that applicants for assistance to researches should make it clear at the outset whether results, if obtained, should be considered as of a confidential nature, as in arranging our experimental work we must avoid conditions calculated to help foreign competitors. Much time and money had been spent upon research in the works of individual firms, whose aggregate expenditure for the purpose far exceeded the sums at the disposal of the Committee of Council, and from the industrial side such work by firms appealed to him as the most hopeful arrangement. But the Government had made a decided step forward by showing their interest in industrial research, and though he expected much more from the scheme the gain would be great if the only result were the training of research workers. Too much must, however, not be expected from research and experimental work in themselves, for those alone would not win back the industries which should never have left us, or even retain those we still possessed. Though it was not for the Standing Committee to deal with such questions, individual and combined efforts were needed to secure that the products of this country find their way to those who need them at home and abroad, and to see that what was wanted was supplied by our industries. He hoped that it would be possible to co-operate with our fellow-countrymen beyond the seas in carrying out many useful investigations.

Sketching and photographing are now, for architects as for other artists, hedged around with unpleasant restrictions, and we therefore bring before our readers some advice given in the "Journal of the Imperial Arts League," a body which is doing good service for artists and should be joined by all architects who deem themselves worthy to be ranked amongst artists:—

In the last number of the "Journal" we announced that as a result of the efforts of the League and of the energetic assistance given in the matter by Sir Clifford J. Cory, Bart., member for St. Ives, the Admiralty and War Office had been induced to accept the principle of issuing permits for sketching to approved persons and that new regulations on the subject would be issued at an early date. So far these regulations have not appeared, and therefore it is not possible to judge whether these promised concessions will give to artists the opportunities they desire for carrying on their work out of doors.

But even if these new regulations are all that could be hoped for, artists must exercise some discretion in their comings and goings, and they should always, for the purpose of identification, carry a photograph and some suitable papers. The apparently vague and aimless wanderings of an artist about a country district would naturally raise suspicions in the local mind at times like these, and if in such wanderings he strayed too near centres of military importance, or into places where information about naval or military matters could possibly be picked up, he might very easily, and quite legitimately, get into trouble.

A few illustrations of the way in which trouble comes will, perhaps, be instructive. A farmer on whose land an artist was sketching reported him for spying; the military authorities acted on the report and arrested the artist because the place he had chosen adjoined a railway line along which troops and military stores were constantly passing. Another was arrested because he settled down to work beside a very important bridge; and another, a lady, because on her way home from one of the London parks, where she had been sketching with the usual Office of Works permit, she made a pencil note of some soldiers at the railway station. In these cases there was, it must be admitted, sufficient want of thought on the artist's part to justify at least a measure of suspicion.

Another instance can be given to show the value of identification papers. An artist working within a few miles of his birthplace, and in a district where he was well known, was much surprised at being closely interrogated by a stranger. He found out afterwards that this man was a detective sent down specially from London to catch a prominent German spy, who, with a confederate, was known to be in the neighbourhood and to be trying to reach a place of military importance not far off.

The moral of it all is that the artist must think a little about the way he should use the privileges which may be accorded to him. To be suspected of spying is unpleasant, but he must remember that his ways are not quite like those of other people, and that if he is too aggressively unusual he is very likely to bring upon himself inconvenient attentions. The present-day conditions of existence are very unlike what they were in the past, but to these conditions we have all got to adapt ourselves.

The Dublin Fire and Property Losses Association are still dissatisfied with the views of the Government as to the compensation to be paid to those who have suffered loss by the destruction of their property in the recent rebellion. Mr. Samuel, the Home Secretary, received a deputation from the Association and set out in a long speech the Government's view, which may be shortly condensed as holding that all losses which have occurred through the rebellion might have resulted from an acci-

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dental fire in peace time, and were, therefore, insurable under a fire policy, so that the amount of each man's fire insurance shows the extent to which he desired to be covered from loss, and hence is a true measure of the compensation which should be awarded to him.

A curious and apparently somewhat difficult point of law has arisen in a Scottish case where an architect determined the contract and employed other contractors to complete the work at the cost and expense of the original contractors. The contract admittedly gave the architect the right to take this course, but the point was raised that this determination nullified the arbitration clauses. After varying decisions in lower Courts, the Lord Justice Clerk and Lords Dundas, Salvesen, and Guthrie, sitting as the Second Division of the Court of Session, decided, though not unanimously, that the determination of the contract did not render inoperative the arbitration clauses, under which, apparently, would be determined the amounts to be paid to the original and the succeeding contractors respectively.

ILLUSTRATIONS.

SCUNTHORPE NEW POST OFFICE.

THE new Post Office for Scunthorpe has been erected on a site in Cole Street. This building is faced with red sand-faced bricks from Walkeringham, Gainsborough, purpose-made bricks being used to form the arches over the ground-floor windows and doorway. Ancaster freestone has been used for the cornice and the keystones of first-floor windows, &c. The roof is covered with red sand-faced tiles. The entrance doorway, which has been carried out in wood, has a semicircular fanlight arranged to line with and match the heads of ground-floor windows; the pilasters on either side support a somewhat simple entablature, and enclose a door designed with six panels —moulded.

The architect was Mr. Charles P. Wilkinson, of H.M. Office of Works.

OXFORD COLLEGE SERIES.—NOS. 170, 171 & 172.—MANCHESTER COLLEGE.

MANCHESTER COLLEGE stands in Mansfield Road, to the north of Holywell. It is built round a small quadrangle, the southern side of which is enclosed by the chapel, the northern side by the library wing, and the eastern side by the range of buildings which faces to Mansfield Road, and on the west side by domestic buildings. It was completed in 1893 from the design of the late Thomas Worthington and his partner, Mr. Elgood, upon a plan which at that time was supposed to be amply large for all requirements. Development, however, has gradually taken place, fresh land has been acquired, and a hall recently built from the designs of Mr. Percy Worthington is part of a general scheme for possible further developments. The original building is built of Derbyshire stone, with internal masonry of Bath stone; the new hall and the small tower which forms the connection between it and the chapel is externally of Clipsham stone, lined internally with Guiting stone. The internal woodwork is of oak in the hall, chapel, library, and the chapel contains a complete and fine series of windows by William Morris from the cartoons of Sir E. Burne-Jones, done under Morris's own supervision. Messrs. Parnell & Son, of Rugby, were the contractors for the original building, and Messrs. Benfield & Loxley for the new hall, in which are some interesting heraldic glass by Mr. Louis Davies and metal-work by Mr. Edward Spencer. The carving was modelled and executed by Mr. Miller, of Messrs. Earp, Hobbs & Miller. Heating by Messrs. G. Haden & Sons; electric-lighting by Messrs. Chas. Lightfoot Bros, superintended by Mr. Wm. Walton as electrical engineer.

OXFORD COLLEGE SERIES.—NO. 173.—ST. EDMUND'S HALL.

THIS view of the "backs" of St. Edmund's Hall is picturesquely quaint from the unaffected simplicity and jumble of purely utilitarian features.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE final meeting of the 1915-16 session of the Royal Institute of British Architects was held on Monday, the 19th inst., at 4 P.M. Mr. Ernest Newton, A.R.A., president, occupied the chair.

Mr. E. Guy Dawber (hon. secretary) announced with great regret the decease of Lord Kitchener, who was elected an Honorary Fellow in 1910. Also the death of Sir H. F. Donaldson, who perished with him, an Honorary Associate since 1896. At the Town Planning Conference held at the Institute in 1900 Lord Kitchener, who was known to have very enlightened views on the subject, took the chair at the meeting at which a paper on the Planning of Khartoum and Omdurman was read, and himself contributed an interesting address on the occasion. Sir H. F. Donaldson came into touch with the Institute in 1895 at the time of the brickwork tests carried out by the Science Standing Committee: he was at the time Chief Engineer of the London and India Docks, and he joined the committee and was instrumental in procuring for the work of the Institute the use of a vacant piece of land on which to conduct the experiments; he took an active part in the investigations and raised some useful points in the discussions on the Science Committee's report.

A vote of condolence was passed in silence, the members rising in their places.

Mr. Guy Dawber also announced the decease of Edward Thornton, of Calcutta, elected Associate 1892 and Fellow 1904, and Ernest Willmott, Fellow, elected 1906.

The Secretary announced that Mr. Charles Ernest Lawrence, Newport, Mon., has been reinstated by the Council as a Licentiate of the Royal Institute.

ROYAL GOLD MEDAL.

Mr. Ernest Newton, A.R.A. (president), then delivered the following address:—

My Lord Provost, Ladies and Gentlemen,—We are assembled here this afternoon to do honour to a great Scottish architect, Sir Robert Rowand Anderson.

I regret very much, and I am sure that you regret also, the absence of Sir Rowand on account of illness, and that you will wish those who represent him on this occasion to convey to him our sympathy and to tell him that, although his absence has given us the pleasure of welcoming Sir Robert Inches, the Lord Provost of Edinburgh, who has so kindly honoured us by coming expressly to receive the medal on Sir Rowand's behalf, and Mr. Lorne Campbell, who will read Sir Rowand's address, we were looking forward to the occasion as an opportunity of testifying personally to him our admiration for his work as an architect, and our appreciation of the great services he has rendered to architecture.

This is the second occasion on which I have had the honour of presenting the Royal Gold Medal, and each occasion has had this special point of interest. Last year the recipient was Mr. Frank Darling, who was the first Canadian architect to receive this mark of the esteem of the Royal Institute of British Architects. This year the medal in being conferred on Sir Rowand Anderson goes for the first time across the Border.

This is one of those occasions on which the President is not expected to do more than make a few prefatory remarks before presenting the medal, and he then leaves the field to others, but Sir Rowand Anderson has had such a long and distinguished career that it is difficult to condense even introductory remarks into a becoming length. He was born in the year 1834, and I have

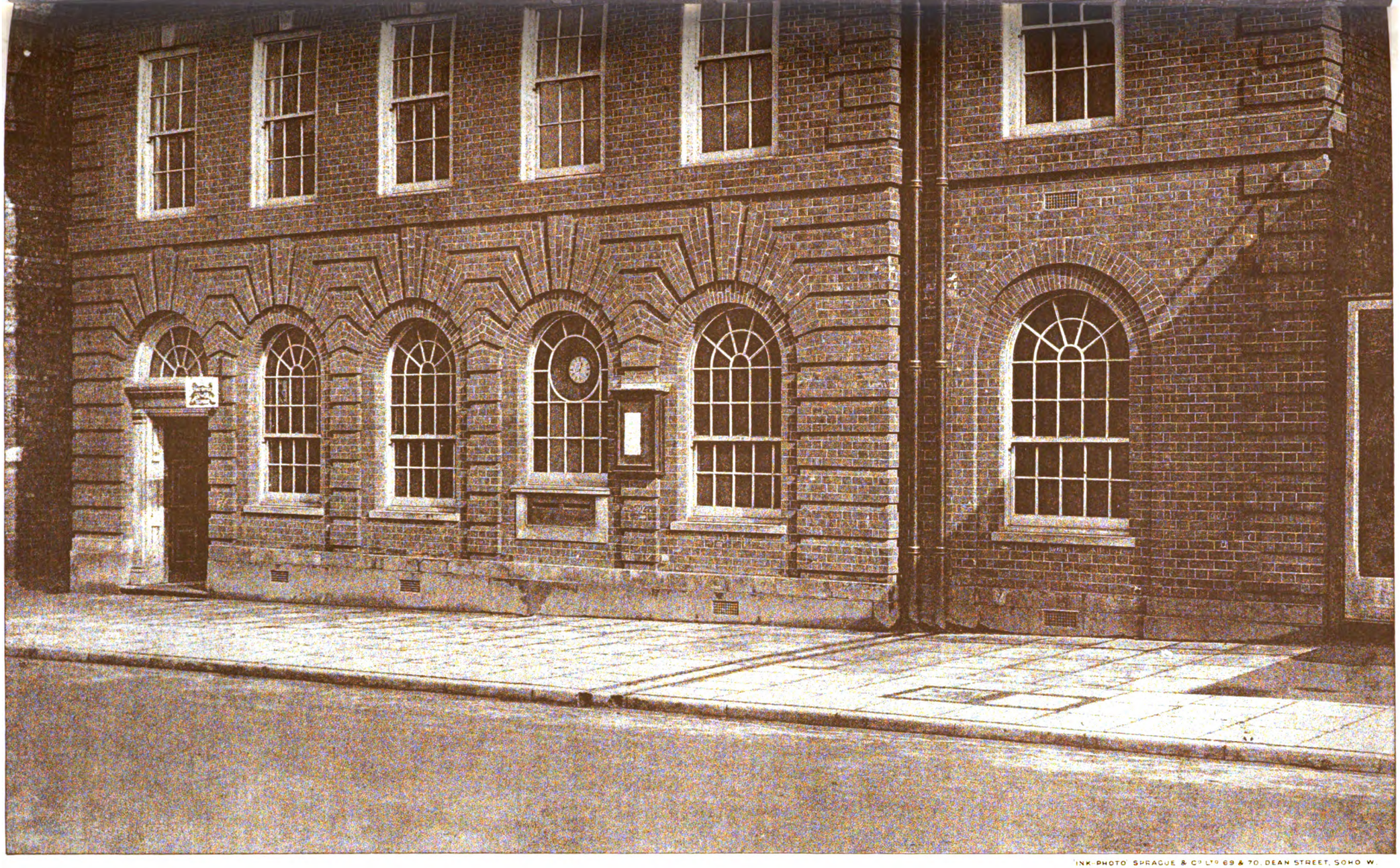
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SCUNTHORPE NEW POST OFFICE.

Mr. CHAS. P. WILKINSON (of H.M. Office of Works), Architect.

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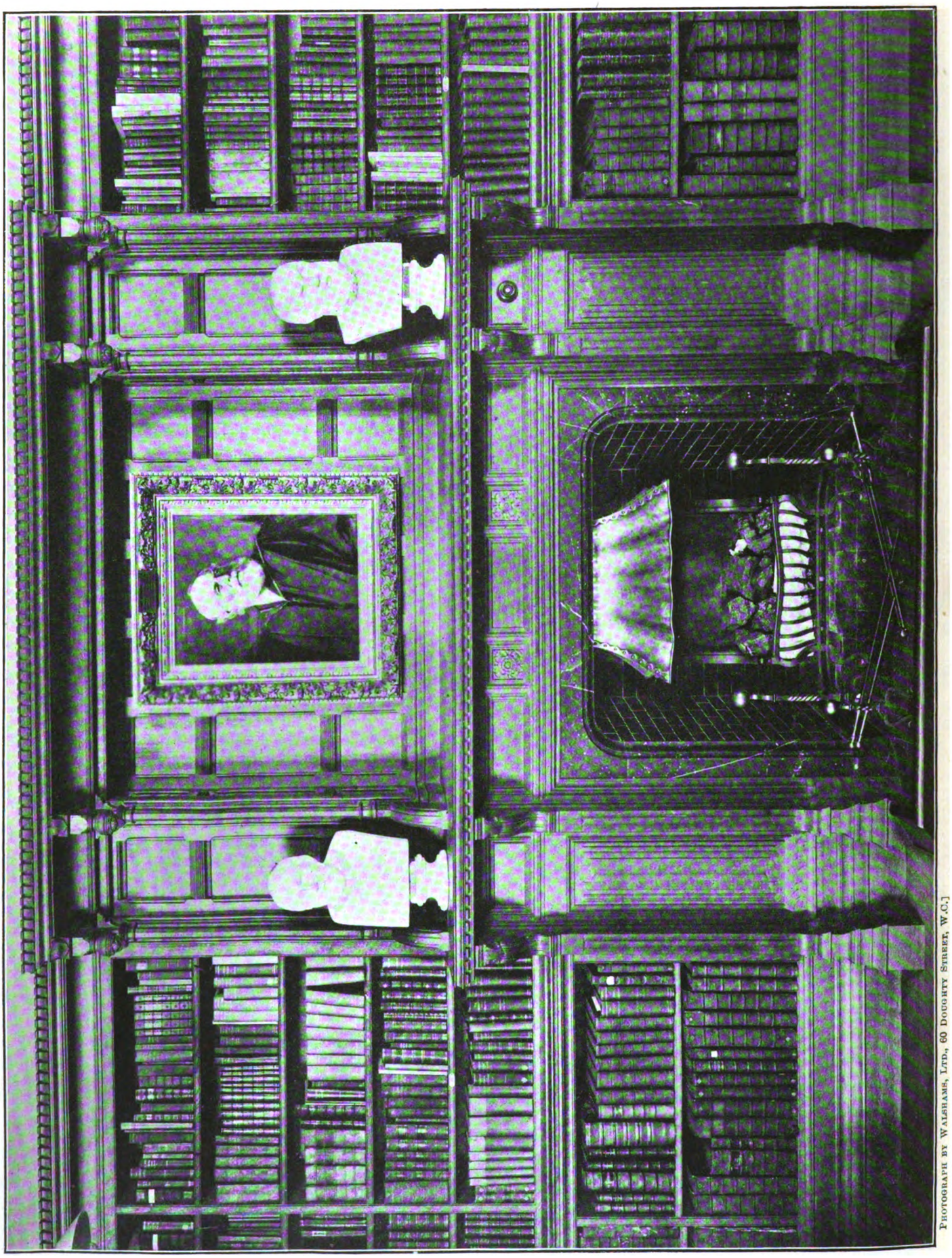
OXFORD COLLEGE SERIES. No. 170.—MANCHESTER COLLEGE: CHAPEL.

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OXFORD COLLEGE SERIES. NO. 172.—MANCHESTER COLLEGE: FIREPLACE IN LIBRARY.

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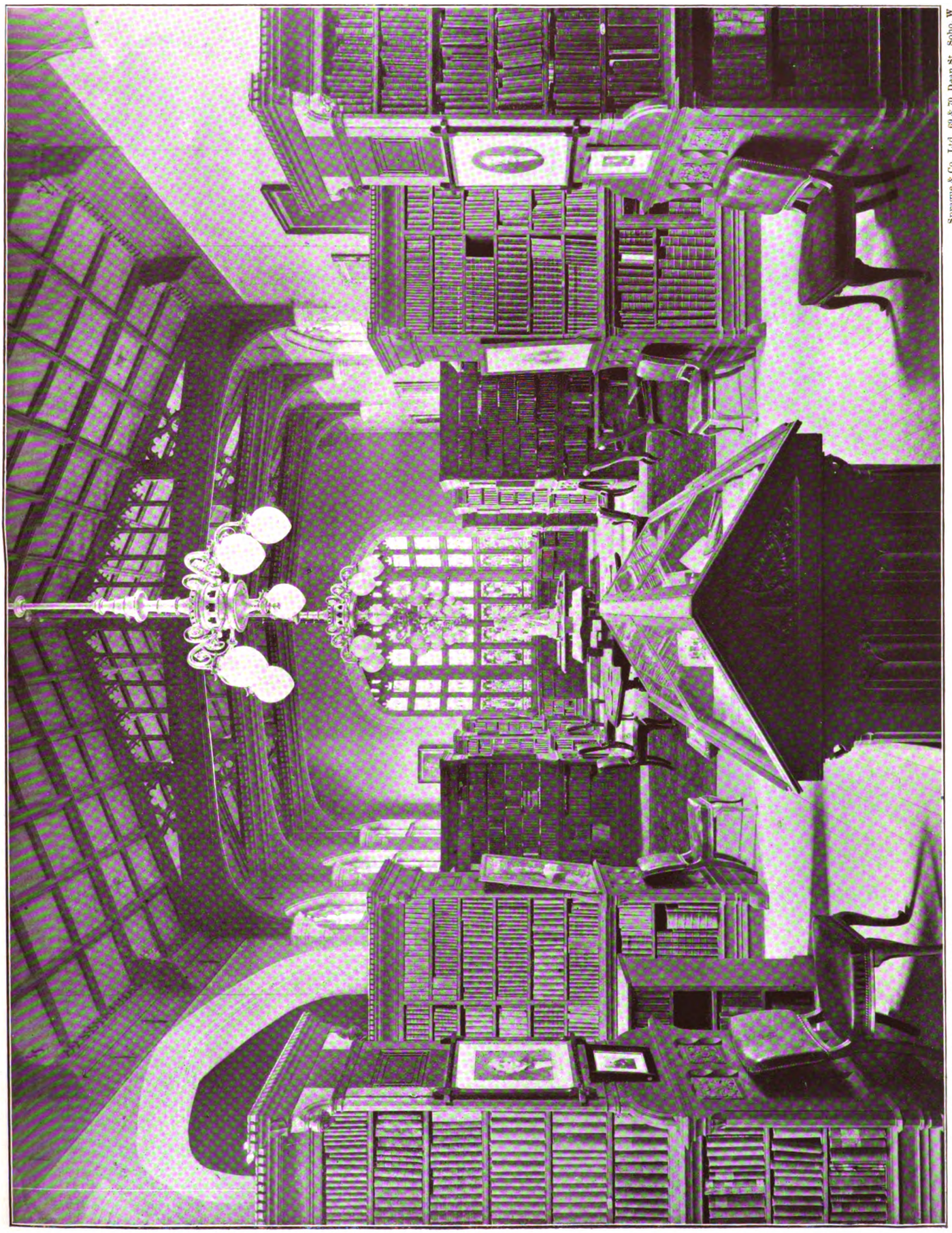
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OXFORD COLLEGE SERIES. NO. 173.—ST. EDMUND'S HALL: "BACKS."

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OXFORD COLLEGE SERIES. No. 171.—MANCHESTER COLLEGE: LIBRARY.

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obtained from him, in his own words, the following interesting sketch of his career:—

Like some others, I was not brought up to architecture in the recognised way—that is, by means of an apprenticeship—but was articled to a lawyer in the hope that I would follow a legal career. After four years spent in what to me was most uncongenial work, my parents recognised the inevitable and allowed me to follow the profession of architecture.

I became a pupil of a teacher of architectural drawing, and entered also the Architectural Section of the School of the Board of Manufactures, the precursor of most of the schools of design in this country. I afterwards left for a year's residence in Italy and France, where I spent my time in measuring and drawing work of the Renaissance and Mediæval periods.

On returning to Edinburgh I spent some time in several offices, took part in some competitions, gained some and lost others. In 1875, when the new schools were being built under the Education Department, I was invited to enter a limited competition of six. I came out first, and the carrying out of three of the largest schools was entrusted to me.

In 1878 the University of Edinburgh launched a large new scheme for housing all their medical classes in one building, and invited six architects to submit plans for the same. I was one of them. Previous to preparing my plans I made an extensive tour in Germany, France, and Holland to examine and make myself acquainted with the new buildings that had been erected at the centres of education there, so that my design might be applied to the new methods of teaching.

My plan, which was based entirely on the use to be made of these buildings, carried the day, and I was appointed architect. Later on I was asked to design and carry out the great Graduation Hall, known as the McEwan Hall, and other buildings for the University, and also for the University College at Dundee.

As architect to the Board of Manufactures I designed and carried out the Scottish National Portrait Gallery and National Museum of Antiquities, Edinburgh; also the restoration of the cathedral at Dunblane, which at the time was under their jurisdiction.

These were followed by a number of public and private buildings.

A complete list of Sir Rowand's works will appear in our Journal, but amongst them the following demand particular mention to-day:

Public Buildings.—New Medical School, Edinburgh University. He won this in competition, and the buildings have cost in all nearly £1,000,000. (Included in this group is the well-known McEwan Hall.) The Central Station Hotel, Glasgow; the Scottish Conservative Club, Edinburgh; the National Portrait Gallery, Edinburgh; the Pollokshaws Town Hall.

Churches.—The Catholic Apostolic Church, Edinburgh; the Govan Parish Church; St. Paul's Church, Greenock; Glencorse Parish Church; Inchinnan Parish Church; St. James's Episcopal Church, Inverleith; the Episcopal Church, Stirling; the Episcopal Church, Colinton; the Episcopal Church of St. Andrew's, Kelso; the Episcopal Church, Forfar; the Episcopal Church of St. Augustine, Dumbarton; the Episcopal Cathedral Church of St. Andrews; All Saints' Church, Parsonage and Schools, Edinburgh; St. Margaret's Roman Catholic Church, Dunfermline.

Public Memorials.—The Buccleuch Memorial, Edinburgh; the Montrose Memorial, Edinburgh; the Inglis Memorial, Edinburgh.

Domestic Work.—Mount Stuart House for the Marquis of Bute; a mansion at Glencoe, for Lord Mountstephen.

Restorations.—He has carried out important restorations at Dunblane Cathedral; King's College Chapel, Aberdeen; Bothwell Collegiate Church, and at Jedburgh and Kelso.

Schools.—In the early part of his career he carried out several large schools for the Edinburgh School Board.

[Photographs and drawings of some of these buildings were on the walls of the R.I.B.A.]

One might have thought that the carrying out of such a formidable list of important works would have been sufficient to absorb the energies of any ordinary man, but, with all these heavy responsibilities, he nevertheless found time to devote to the improvement of architectural education in Scotland.

The Edinburgh School of Applied Art, now merged in the Architectural Section of the Edinburgh College of Art, owes more to him than to any other man, and many of the schools since started throughout the country are based on the principles laid down by him.

He presented a valuable collection of architectural books and casts to the School, as well as a large number of measured drawings of Scottish ecclesiastical and mediæval buildings, prepared at his own cost. These drawings now form the greater part of the collection of the National Art Survey of Scotland; they are of great educational value, and a lasting record of buildings many of which have already disappeared.

I wish I could speak from a personal knowledge of Sir Rowand's actual buildings, but such is my incurable distaste for travel and adventure that I blush to have to confess that it is more than forty years since I made my first and only visit to what was then rather a far country. I will therefore avail myself of the appreciation of one who has been more fortunate in this respect than I have, and who gives as the characteristic quality of his work its evident integrity, each building being thought out for its special purpose with a simplicity and directness of conception which dominates the whole design, the beauty of any particular motif or the careful study of its detail never being allowed undue prominence, each work being eloquent of the conscientious study of the requirements and purposes of the building and of his knowledge of, and sympathy with, the various crafts employed.

It is not too much to say that his work and teaching have not only influenced large numbers of architects now in practice, but that many of the building firms in Scotland owe their capacity for fine craftsmanship and selection of material to his work and guidance.

As a proof that this high view of Sir Rowand's attainments is shared by others outside Great Britain it is only necessary to mention that he has been awarded medals in Paris, Munich, and Chicago. Our own country, true to her traditions, is the last, instead of the first, to mark the appreciation which it has long felt for one of Scotland's most eminent architects.

The Gold Medal was then handed to the Lord Provost of Edinburgh, Sir Robert Inches, who had made the journey to London on behalf of Sir Rowand Anderson, who was incapacitated by illness.

Mr. Lorne Campbell then read the following address by Sir Robert Rowand Anderson:—

Mr. President, Ladies and Gentlemen,—This unexpected and great honour which has come to me from the King acting on the advice of this Institute, and the generous and appreciative remarks of the President, and the reception you have given to them, make it very difficult for me to frame an adequate reply.

This Gold Medal may be justly looked upon as the blue ribbon of the profession. It is not a political or social honour like the blue ribbon of the Order of the Garter, of which Lord Melbourne, Queen Victoria's first Prime Minister, on the occasion of the selection of someone to fill a vacancy in that exalted Order, said there was no difficulty in making a selection as there was no "damned merit" about it. Now, quite the contrary is the case here. Merit, you say, is the sole title recognised by this Institute. The difficulty in making a selection from a body where so many are worthy of the honour is great, and on the list there is no name that does not reflect the care with which it has been chosen and with which it is not a great honour to be associated.

Our President has told us that this is the first time that the Royal Gold Medal has crossed the Border. That is an additional reason why I should feel proud to be the one selected to receive it, and this unique event gives me

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an opportunity for pointing out to you that, although this is the first time that such an honour has crossed the Tweed northwards, there has been a steady flow southwards from Scotland of much architectural talent, contributing greatly to the advancement of our art. From the time of the Union of England and Scotland, which though largely accomplished by intrigue and bribery, has nevertheless resulted in great blessings to Scotland, as well as to England, the road to the south became the great highway for Scotsmen in search of fame and fortune, and in spite of much opposition and prejudice many found them.

The first man I should refer to is Sir William Bruce, of Kinross, a contemporary of Sir Christopher Wren. His connection with England is very slight. He appears to have done some work at Ham House, in Surrey, for Lady Dysart.

The next name of any consequence is James Gibbs, of Aberdeen, born 1674, died 1754. He studied for some years in Rome, and returned to London in 1710, where, under the influence of his early patron John Erskine, Earl of Mar, he soon rose to fame.

Colin Campbell, a Glasgow architect, well known as the author of "Vitruvius Britannicus," under the patronage of the great Chief of his Clan, the Duke of Argyll, removed to London and carried on a considerable business as an architect.

The Milne family have a long and continuous connection with building and architecture. A Milne appears as master mason to King James III. of Scotland. His family can be traced down to the end of the eighteenth century, and had a hand in almost everything, such as royal palaces and castles, town halls, &c., &c., and many bridges. Robert Milne, a descendant of the master mason of King James III., was born in Edinburgh in 1733. After about four years studying architecture in various parts he returned to England in time to take part in a competition for the new Blackfriars Bridge, and was successful against sixty-nine competitors. From this time work flowed in on him, and in 1766 he was appointed Surveyor to St. Paul's Cathedral, and it was he who suggested the widely known epitaph to Sir Christopher Wren. He has a further claim to the remembrance of this Institute, in that he was an original member of the Architects' Club, founded in 1791, which dined once a month in the Thatched House Tavern during the season, out of which gathering grew the present Institute.

The next best known name is that of Adam: the three sons of William Adam, of Maryburgh, in Fife, an architect of great repute, with many good buildings to his credit. These sons made their descent on London in 1768. Their influence on architecture exists to the present day. A Wren church and an Adam house still hold their own.

I could prolong this list, but will close it with the names of two men who have done much to deserve to be remembered and held in esteem—the late Richard Norman Shaw and John McKean Brydon, both of them my countrymen.

You have been good enough to include my services to architectural education as one of the qualifications for my receiving this Gold Medal. I acknowledge most gratefully your reference to this. I began to take an interest in architectural education in 1892. South Kensington up to that time had the entire control of art education, but the education they gave never seemed to produce any result beneficial to the architectural student, and it is not difficult to see why this was so. The system of payment by results poisoned the whole thing. The teachers' income rose and fell according to the number of the prize drawings produced by the student. These had to be worked up to a standard of excellence, as drawings, to meet the views of the examiners in London. So it eventually came to pass that the school existed for the benefit of the teacher more than for the taught. The hopelessness of expecting anything to come out of this system of teaching as regards architecture culminated in 1892. A number of architects and others, including myself, with the aid of the Board of Manufactures, then combined to start a school entirely free from the baneful influence of South Kensington. I should here inform you that the Board of Manufactures came into existence about the time of the Union of Scotland and England, and administered some of the money known as the Equivalent Grant for the Advancement of the Arts and Industries of Scotland. In addition to what this Board was able to do for us, a fair amount of money was subscribed by those interested in this new departure. But the scheme was nearly wrecked by the difficulty of getting a director of sufficient standing and acquirements for such a salary as we could afford. So, to prevent the collapse of this promising movement, I was asked, and undertook, to act as Honorary Director. I gave as much time as I could possibly spare to what has always been to me interesting work. With the assistance of one or two paid teachers a start was made. From the very first the scheme caught on. It gradually became recognised by the student as the best means of getting an education to supplement what he was acquiring as a pupil or apprentice in a private office. It would take up too much of your time if I gave a detailed account of the school work, but I shall allude to one or two of the leading features of it. In the beginning of my architectural career I kept myself in contact with the best work of the past by spending all my spare time in sketching and measuring both at home and abroad, including a year in Italy and France. There was no golfing for youth in those days. Knowing the benefit I derived from this, I thought we could not do better than make the study of old work the basis of our teaching. With the consent of the committee this was done.

Another important feature in our teaching was the organising of a scheme for obtaining accurate records of buildings erected previous to the eighteenth century. This was called a National Art Survey. It was a very ambitious scheme, but it worked out well. Two of the best draughtsmen were selected annually, and to enable them to devote their entire time to this they were paid small salaries, and, in addition, an allowance for travelling and incidental expenses. All the drawings made by them became the property of the school. This work has been going on since 1894, but has been stopped for the last two years owing to the war. There are now, however, something like two thousand sheets, forming, I should say, the finest collection in this country. It contains, in addition to the surveys of the buildings, a large collection of drawings and details of early plaster work, wall panellings, fireplaces, and a most interesting collection of old furniture to be found in buildings still inhabited. The result of all this has been most stimulating. I never knew a more enthusiastic or industrious set of students. The work they produced was of a very high standard of excellence, and some of them secured many of the coveted prizes which you offer here to competitors from all quarters. On leaving school the students have always been greatly sought after as assistants. They are scattered all over Britain and its colonies, and from letters I have often received they all attribute their success to the sound practical education they had.

I have always contended that the degree of beauty we see in our buildings and the satisfaction we derive from them depend largely on their fitness and the more or less successful expression of the purposes that call them into existence. One or two examples from my own town of Edinburgh will bring my meaning home to you. Take the Royal High School and the Surgeons' Hall, both of which belong to the period of the Greek Revival. They were designed by men thoroughly educated in the art of their day. Looked at as abstract pieces of design they are of the highest order, but the façades of these buildings are not the product of the buildings they are attached to. They are mere screens to mask what is behind them, and that might have been anything other than what

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is actually there. Now, let us take a look at the great valley that divides the old from the new town. Overhanging the steep cliffs of the Calton Hill is seen what looks like a castle. As a matter of fact it is mistaken by many who enter Edinburgh for the first time by the North British Railway to be the world-famed Edinburgh Castle. It is actually the Calton Jail. I remember meeting the late Mr. Billings, the architect, and author of the "Baronial and Ecclesiastical Antiquities of Scotland," a work which had a great influence on the domestic architecture of Scotland for many years during the last century. I had just before then seen a building of his erected for a waterwork—it took the form of a castle. I asked him why he made this work like a castle and not something evolved out of the use of the building. He replied, "Can you tell me what a waterwork is like, as I must have a type to work from?" As I could not do so or convince him that, as he ought not to build a waterwork like a castle, he might at least approximate it to something characteristic of the purpose of the building, I had to retire from the dispute, leaving Mr. Billings quite satisfied that his imitation castle with a high tower was a very good representative of a water-pumping station. The architect of the Calton Jail, the building I have referred to, under the influence of the prevailing taste of the day, must have looked at the problem he had to solve from the standpoint of working from a type, and so he chose a castle, but as a castle is a building to keep people out, and a jail to keep people in, see what a deplorable result: one of the finest sites in the world covered with a toy castle, devoid of expression and utterly meaningless.

Again, if you take the plans of the old Scottish castles or mansions of the sixteenth and seventeenth centuries, you can read them like a book from the foundations to the chimney-tops. You can distinguish the original tower that the family once lived in and held its own against all comers. On further examination you will notice an addition made when the family became richer and times were not so warlike. As time rolled on and it was no longer necessary to provide for defence you will find larger additions. But now, everything is done for comfort, as understood in those days, and a peaceful country life, the whole group becoming wonderfully picturesque; but it was never built to look picturesque or interesting; it was built from time to time to suit the necessities of the day and the means of the family, and hence its resulting picturesqueness. Contrast with this the mansions erected in imitation of the old ones, and try to read them from the inside to the outside or the reverse. You cannot do so, as the one contradicts the other. The whole thing is a modern house, a very modern house, masquerading as a castle of a territorial baron, and so you have everything in these buildings that is false, misunderstood and misapplied, the result being a costly delusion that such a building is true art and in harmony with the traditions and scenery of the country.

The aim of the teaching in our school was to counteract this sort of thing by teaching the students to look at buildings with an analytical eye and to dissect them as a medical student does his anatomy, and to realise the ideas and purposes that call the buildings into existence. The seed sown by this school and others which have wisely adopted our system of teaching was bearing good fruit before the outbreak of this terrible and unjustifiable war, and there were signs everywhere in Scotland that we had begun to develop architecture, especially in domestic work, on right lines with a distinct national bias. The contention that Gothic and not Italian, or *vice versa*, was the only style fit to be used in this country has spent itself, and there is now better Gothic and Renaissance work being done than during the period of the Battle of the Styles, as well as a growing absence of those inconsistencies I have alluded to, and I believe we can now look forward to our buildings becoming more and more characteristic of the age and purposes to which they are devoted.

With these few and inadequate remarks I again offer my grateful thanks to His Most Gracious Majesty and to this Institute for the great honour conferred upon me to-day, an honour well worth a lifetime of earnest labour and thought, to advance that art to which we are all devoted.

Sir John Burnet, at the end of the meeting, proposed a vote of thanks to the Lord Provost of Edinburgh. This was seconded by Mr. J. A. Gotch.

Sir Robert Inches, in the course of a genial reply, paid a warm tribute to Sir Rowand Anderson and all he has done for Edinburgh. There was nothing, he said, which he would not do for Sir Rowand.

LEEDS AND WEST YORKSHIRE ARCHITECTURAL SOCIETY.

THE annual general meeting of the above Society was held on Thursday, June 15, at 5 Greek Street, Leeds, Mr. G. F. Bowman in the chair.

Mr. Whitehead presented the annual report of the work done by the Society for the past year, and mentioned the fact that at last the Department of Architecture at the Leeds School of Art under Mr. G. J. Coombs has received recognition from the Royal Institute of British Architects, and is the first provincial school of art to obtain same.

Mr. R. Fielding Farrar presented the annual balance-sheet, which was adopted, and it was proposed, seconded, and approved that a sum of £150 be invested in the War Loan.

The following officers were elected for the ensuing year:—*President*, G. Fredk. Bowman; *Vice-Presidents*, J. F. Walsh, F.S.I., and C. B. Howdill, A.R.I.B.A.; *Hon. Treasurer*, R. Fielding Farrar, A.R.I.B.A.; *Hon. Librarian*, G. J. Coombs, A.R.C.A.; *Hon. Secretary*, Wm. Whitehead, A.R.I.B.A.; and the following members of the Council: Messrs. W. J. Morley, F.R.I.B.A., W. G. Smithson, A.R.I.B.A., J. C. Procter, A.R.I.B.A., J. E. Braithwaite, A.R.I.B.A., W. Alban Jones, and Douglas Bowman (Associate member).

THE LATE EDWARD THORNTON, F.R.I.B.A.

WE have to record the death of Mr. Edward Thornton, F.R.I.B.A., which took place somewhat suddenly, in his forty-seventh year, in Calcutta.

Mr. Thornton was the third son of Sir James and Lady Thornton, of Indian fame. He served his articles with Mr. Rowland Plumbe, F.R.I.B.A., and was associated for some years with Mr. A. H. Ryan-Tenison, F.R.I.B.A., taking up his present position in Calcutta in 1898, some nineteen years ago.

Although a young man, Mr. Thornton had carried out some very large and important works in India—such as the palace for the Maharajah of Tipperah, the Chartered Bank of India and China, Messrs. Martin & Co.'s premises in Calcutta, and the Memorial Throne to the late Bishop Jackson in Calcutta Cathedral.

Mr. Thornton was a warm supporter of the Native School of Painting, and was himself a colorist of considerable standing.

THE USES OF ZINC AND ITS COMPOUNDS.*

By J. C. MOULDEN, A.R.S.M., M.Inst.M.M., Member Australian and American Institutions of Mining Engineers.

ZINC has become so much a part of our modern life that there are few of us who do not daily handle it in some form or another. Every particle of brass or German silver contains its proportion, and the bronze coinage of the Realm is a triple alloy consisting of 95 parts of copper, 4 of tin, and one of zinc.

* Extract from the Peter Le Neve Foster Prize Essay, printed in full in the "Journal of the Royal Society of Arts," May 23 and June 2.

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Up to about the middle of the nineteenth century the industrial uses for zinc were confined substantially to the manufacture of alloys and to rolled sheets, largely used for roofing. With the spread of the so-called galvanising, whereby sheets of iron are dipped in molten zinc and receive a thin coating, a new avenue for its employment was opened up, and this industry is to-day the greatest consumer of the metal.

Alloys.—The manufacture of alloys constitutes certainly the most varied and interesting use of zinc, although in importance of actual tonnage of metal consumed it comes at least second to galvanising.

Zinc alloys with copper in all proportions to form brass. The ordinary brasses contain from 27 to 45 per cent. of zinc, with from 73 to 55 per cent. of copper, the colour and characteristics varying with the relative proportions of each. For the commoner brasses, particularly those for casting and turning, a small proportion of lead, such as is contained in commercial spelter, is not only admissible but even desirable; but for the finer grades, and those intended for spinning and drawing, it exercises a most detrimental effect by causing cracks and fissures. In such cases, therefore, a specially pure metal has to be used containing 99.8 per cent. of zinc as a minimum, with 0.1 per cent. of lead and 0.1 per cent. of iron as maxima.

These fine brasses are essential for the production of cartridge-cases, alike for rifle, machine-gun, and the lighter types of artillery.

For turning, on the contrary, the alloy should contain a well-marked proportion of lead, together with relatively high zinc and low copper. This leaded alloy is often called "clock brass," the best all-round working properties being secured when the proportion of lead rises to from 2 to 2½ per cent. in an alloy in which the proportion of copper is as 60 to 40 of zinc. This turns freely and cleanly and, with due care, allows of rolling and drawing to a substantial extent.

The subject has been investigated by Sperry* with much care.

The greater the proportion of copper the greater the difficulty in machining, and for shell-brass the ratio may fall as low as 55 copper to 45 of zinc.

Muntz metal is a brass, formerly much used for the sheathing of wooden ships, being much cheaper than copper and not so liable to foul. The inventor prescribed 60 of copper to 40 of zinc.

Cartridge brass, subjected as it is to the severest of treatment, requires the use of both copper and zinc, as pure as possible, with commonly 70 of the former to 30 of the latter.

Brasses with a small content of iron ranging from 1.5 to 4.5 per cent., with 55 to 60 of copper, and 38 to 41 of zinc, give alloys which, when hammered or rolled, possess very great tensile strength, Sterro and Aichs metals being representatives of the class.

The colour of the copper-zinc series varies from the red of pure copper at one end of the scale, through infinite gradations of reddish-yellow, full and pale yellow to the bluish-white of zinc at the other end.

The alloys very high in copper and low in zinc have found their greatest use in decorative work for such articles as buttons, imitation gold jewellery, and the like. Tombac, Mannheim gold, Oreide, pinchbeck, mosaic gold, Dutch metal and some others under equally fanciful names, although of practically similar composition, are those most nearly approaching gold in colour and characteristics. They have for long been used, either alone in the cheapest class of jewelry, or as a basis for the deposition of gold by plating, owing to the fact that their colour allows of a real golden effect being obtained with the thinnest possible film of the precious metal.

In the latter part of the eighteenth and early half of the nineteenth centuries some really beautiful and artistic work was executed in pinchbeck—work exhibiting the craftsman at his best. To what base depths the alloy has sunk in our times is glaringly and garishly proclaimed to all who care to take a stroll from St. Paul's to Trafalgar Square and observe. A typical pinchbeck would consist of 83.5 parts of copper and 16.5 of zinc.

German silver, so-called, is a triple alloy of copper, nickel, and zinc; the composition is very variable and is adjusted to the quality desired, remembering always that the common grades contain the least of the most expensive constituent—nickel, which may graduate from the 34 per cent. possessed by the finest to the 7 per cent., or less, in the commonest. A typical fair quality would be composed of copper 60, nickel 20, and zinc 20. The alloy is excellently adapted as a base for the reception of silver-plating, and its use in Continental coinage is familiar to most.

It is interesting to note that a variety of German silver has long been known in China, whence it was exported to Europe in considerably quantities under the name of "pakfong." In 1776 this was recognised as a triple copper-nickel-zinc alloy. It is highly probable that it was the product of cementation, much as calamine-brass was, and wide variations in the percentages of the three metals which enter into its composition are therefore not surprising.

Platinoid is a German silver supposed to contain about 2 per cent. tungsten. It must be confessed, however, that analysis often fails to reveal the tungsten. It is much used in electrical work owing to the fact that its resistance, which is very high, does not vary with changes of temperature.

Antifriction alloys, so much in use for machine bearings, often contain large percentages of zinc, antifriction metal itself with 85 per cent. and Babbitt's metal with 69 per cent. being typical representatives.

Zinc and aluminium alloys, although not in so general use as they deserve to be, offer many points of usefulness, as also do the so-called aluminium-brasses—copper-zinc alloys with a small proportion of aluminium. The zinc-aluminium alloys vary in properties with the proportions of the components. Those relatively high in aluminium are very light and strong, and have found use in the manufacture of scientific instruments. Those in which the zinc is increased, and a small quantity of copper added, cast and machine well for motor-car work. The content of zinc varies from 10 to 20 per cent. as a rule, and in no case is an alloy of any practical value produced if the zinc rises to 40 per cent. or over.

The triple alloys usually referred to under the generic terms of gun-metal and bronze are many in number and extraordinarily varied in composition. They consist typically of high copper, relatively low tin, and lower zinc. Where the true bronzes end and the gun-metals begin is hard to define, the two terms being often very loosely used. A standard Admiralty alloy consists of 88 copper, 10 tin, and 2 zinc, and there are many gradations between the 1 per cent. of zinc contained in the bronze coinage of the Realm and the 10 or 15 per cent. in some other members of the class. The true bronzes are essentially copper-tin alloys, but by the addition of zinc in increasing amounts, and the elimination of the tin, a great series of alloys results which ultimately shades off into the brasses.

It would not be possible to refer in specific terms, however briefly, to all the useful alloys into which zinc enters as a substantial constituent. The part which it plays in such may be judged from recently published standard works* on the subject, which refer to them rather by the hundred than the score. The range covered by them is, perhaps, best indicated by expressing in tabular form some thirty typical examples.

Neither lead nor iron form with zinc alone alloys of any use in the arts, but both gold and silver have a great affinity for zinc, this property forming the basis for the

* Sperry, "The Influence of Lead on rolled and drawn Brass," *Trans. Amer. Inst. Mining Engineers*, Vol. XXVII. p. 485 *et seq.*

* "Mixed Metals." Hiorns, London, 1912; "Alloys and their Industrial Applications," E. F. Law, London, 1914.

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ZINC ALLOYS.

Alloy.	Zn	Cu	Sn	Pb	Fe	Sb	Ni	Mn	Al.	Remarks.
1 Tombac . .	2·8	97·8	...	...	...	...	...	...	...	Viennese, used for buttons
2 Pinchbeck .	6·4	93·6	...	...	...	...	...	...	...	—
3 Tombac . .	8·0	92·0	...	...	...	...	...	...	...	Parisian red Tombac.
4 „ . .	10·0	90·0	...	...	...	...	...	...	...	French Oreide.
5 „ . .	15·0	85·0	...	...	...	...	...	...	...	Imitation gold jewellery.
6 „ . .	20·0	80·0	...	...	...	...	...	...	...	Dutch metal for imitation gold leaf.
7 Brass . .	25·0	75·0	...	...	...	...	...	...	...	Rolled sheet brass.
8 „ . .	30·0	70·0	...	...	...	...	...	...	...	Cartridge brass.
9 „ . .	33·3	66·6	...	...	...	...	...	...	...	Common brass
10 „ . .	34·6	65·4	...	...	...	...	...	...	...	For good brass wire.
11 „ . .	40·0	60·0	...	...	...	...	...	...	...	Muntz metal.
12 „ . .	32·5	65·0	...	2·5	...	...	...	...	...	Clock brass.
13 „ . .	38·0	60·0	...	...	2·0	...	...	...	...	Sterro metal.
14 „ . .	35·66	60·0	1·74	1·41	0·76	...	...	...	...	Delta metal.
15 „ . .	41·6	54·9	1·36	...	1·16	...	...	0·47	0·4	Good manganese bronze.
16 „ . .	38·0	60·0	...	...	...	...	...	...	2·0	Aluminium brass.
17 „ . .	44·0	54·0	...	2·0	...	...	...	...	...	Very common brass, turns well, but quite unfit for rolling, &c.
18 Naval Brass .	37·0	62·0	1·0	...	...	...	...	...	...	Admiralty specification.
19 White „ .	30·0	5·0	65·0	...	...	...	...	...	...	—
20 German Silver	20·0	46·0	...	...	...	...	34·0	...	...	Finest German silver.
21 „ „	20·0	50·0	...	...	...	...	30·0	...	...	Fine white German silver.
22 „ „	36·0	57·0	...	...	...	...	7·0	...	...	Low grade „ „
23 „ „	28·0	56·0	...	...	...	...	16·0	...	...	Good „ „
24 „ „	25·0	50·0	...	...	...	...	10·0	...	...	With 15 of silver, for Swiss nickel 20-centime coins.
25 Bronze . .	1·0	95·0	4·0	...	...	...	...	...	...	British bronze coinage.
26 Gun Metal .	2·0	88·0	10·0	...	...	...	...	...	...	Admiralty No. 1.
27 Motor Alloy .	10·0	2·0	...	...	...	...	...	...	88·0	Light strong alloy for motor-car work.
28 Babbitt's Metal	60·0	4·0	19·0	5·0	...	3·0	...	...	...	For bearings.
29 Bearing Metal .	20·0	76·0	3·0	1·0	...	...	...	...	...	Daimler motor-bus bearings.
30 Vaucher's Alloy for journal-lining.	75·0	...	18·0	4·5	...	2·5	...	...	...	Antifriction alloy.

Parkes process, now in such general use, for the extraction of the precious metals from lead containing them, and to which more extended reference will be made later.

The physical properties, and characteristics generally, of zinc alloys are greatly influenced by the manner in which they are compounded, the order in which the constituents are incorporated, and the temperature at which they are poured. This is not surprising in view of the comparatively low melting- and boiling-points of zinc. Copper, for instance, has a melting-point considerably higher than that at which zinc volatilises.

For such reasons the zinc is the constituent generally added last, and that immediately prior to pouring. In the preparation of all brasses the copper should be melted first and exposed to the air as little as possible, as it has the property of dissolving, not only the cuprous oxide formed by the consequent oxidation, but oxygen itself. These influence the character of the alloy, and further to that, if excessive absorption has been allowed to take place, the subsequent incorporation of the zinc may be attended by violent reaction and ebullition—sometimes even almost of explosive violence—leading to loss of metal and variations in the composition of the alloy.

Much of the brass produced is drawn into wire, and an interesting example of a compound wire is presented by that wherein copper rods were subjected to cementation with pure calamine and carbon at a temperature slightly under that of the melting-point of the metal, which became thus transformed on its exterior portion into brass. The drawing of these rods produced a wire which consisted of brass with a core of copper, and allowed of the production of very fine filaments which formerly found considerable use in the manufacture of imitation gold lace.

All zinc alloys, and particularly the brasses, are extremely susceptible to thermal treatment, and in the drawing of important articles from plates of even the finest of brass frequent annealings and pickling, to remove the consequent scale of oxides, are necessary for proper and successful working. In no branch is this more important than in working brasses destined for the manufacture of munitions of war, such as heavy cartridge cases.

Galvanising.—The operation of galvanising consists in coating iron or steel sheets, wire, netting, or other articles with a thin pellicle of zinc which is sufficiently adherent to protect the metal underneath from rusting and decay.

The process was invented by Crawford in 1837, and is performed simply enough by passing the heated sheets or other articles, previously pickled in dilute sulphuric or hydrochloric acid, through a bath of molten zinc. The object of the pickling is to present a chemically clean surface of the iron for the attachment of the zinc, and the operation, if properly carried out, results in a more or less firm attachment by reason of the actual formation of a contact alloy of zinc and iron.

The temperature of the galvanising bath determines the thickness of the coating; the hotter the bath the thinner it is, and the sheets may be passed, after their passage through the bath, between rolls to remove superfluous zinc. Galvanised sheets often exhibit a beautiful *moiré-antique* surface due to the crystallisation of the zinc.

From the descriptive outline of the process it may be judged how misleading the term "galvanising" is. It has no connection direct or indirect with electricity.

It forms the basis of a huge modern industry which is by far the largest consumer of spelter to-day, and the galvanised wire netting and corrugated roofing sheets must be so familiar to all as to need no laboured description.

The latter third of the last century witnessed a great extension of the industry, which called for very large quantities of spelter.

The passing of the articles through the galvanising bath gives rise to the ultimate formation in the bath of a zinc-iron alloy known as "hard zinc." Being less fusible than zinc itself, it forms hard crusts at the bottom

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of the bath, and has to be removed from time to time. Part passes into commerce for use where a zinc-iron alloy is required, and the remainder is redistilled.

Rolled Zinc.—Zinc lends itself well to rolling into sheet form provided that it be not too high in lead and iron, and that the operation be carried out at the temperature at which it is ductile.

In practice the usual custom is partially to refine spelter in large liquation furnaces of reverberatory type, so as to reduce the lead-iron contents to the minimum practicable by such methods, and to cast the metal into ingots or plates which, while still hot and at the correct temperature, are rapidly passed through rolls until the correct gauge is attained. Very little rolling is done in England, the bulk of it being carried on in Silesia and Belgium; there are also rolling-mills in the United States. Such zinc sheeting finds most extended use on the Continent, where it is used to a very large extent indeed for roofing, either in the original sheets, or in ornamental stamped tile form nailed on exactly as slates are.

As roofing, particularly in the inclined position, it is durable, light, and efficient, and although it has as yet found little application in the United Kingdom for this purpose, the reasons are certainly not due to the shortcomings of the material. True it is that it is inflammable, but that only under conditions likely in any case to destroy the building roofed with it. So important and extended are its uses for roofing in Continental countries that the spelter market may be very materially influenced by the prosperity or otherwise of the general building trade. Fine sheets in perforated form are used as screens and sieves; their use in thinner gauge and unperforated form for the lining of airtight wooden cases, hermetically sealed by soldering, must be familiar to everyone who has been in tropical countries.

Thick rolled zinc plates, sawn to suitable sizes and drilled for bolting, are used to a considerable extent in marine boiler work to prevent corrosion of the boiler plates. The highly electro-positive zinc, fastened within the boiler, receives the attack, and can be renewed from time to time.

Rolled zinc plates of specially high quality find important use in the photographic reproductive process known as photo-zincography, and in photo-etching.

Thin zinc sheeting stamped with varied ornamental designs in relief has of recent years found a very considerable use for ceilings, and its uses for dozens of articles in ordinary domestic use, such as bath-tubs, pails, toys, &c., must occur to everyone.

We owe the satinised surface finish on many of our better-class papers to the use of hot zinc sheets with a fine homogeneous surface.

(To be continued.)

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

DORSET.

Dorchester.—Cottage, Holloway Road, for Mr. G. J. Dennis. Messrs. Jackson, Son & Feacey, architects, 26 South Street; also
Cottage, Holloway Road, for Mr. G. E. Legg; also
Cottage, Greyhound Yard, for Mr. G. J. Dennis.
Steam laundry, Victoria Park: extension, for Miss Ratcliffe. Mr. J. Herridge, builder, Olga Road.

DURHAM.

Byers Green.—Sixteen houses, Harvey Street: proposed alterations, for Messrs. Bolckow, Vaughan & Co.

LANCASHIRE.

Cleveleys.—Congregational church: proposed Sunday school.
Manchester.—Chemical Works, Bank Street, Clayton: addition.

LINCOLNSHIRE.

Market Rasen.—Two houses, George Street, for Mr. T. Hill (plans submitted by Mr. C. E. Kendall).

SURREY.

Croydon.—Three houses, Lucerne Road, for Mr. A. W. Dawson (of Teevan Road, Addiscombe).
Nine houses, Park Road, South Norwood, for Mr. C. Gray (of 52 Park Road).

WARWICKSHIRE.

Coventry.—Factory, Hawkins Road, for the Metallurgical Co., Ltd.
Works: extensions, for the Condor Engineering Co., Ltd.
Edgwick Works: extensions, for Messrs. Alfred Herbert, Ltd.
Stamping Works: extensions, for Mr. T. Smith.

WILTSHIRE.

Little Cheverel.—Rectory: additions and alterations.

WORCESTERSHIRE.

Bromyard.—Proposed P.M. chapel, Collington.
Eckington.—The "Crown" Inn: alterations, for Mr. John Griffin Baker.

WALES.

Cardiff.—King Edward VII. Hospital: Massage Department extension. Messrs. Knox & Wells, contractors, Bangor Street; also further extensions proposed.

SCOTLAND.

Bervie.—Parish church: alterations, &c., to Manse. Separate trade contractors.
Buckie.—Houses, Marchmont Circus, for Mr. A. Garden.
Coupar Angus.—Strathmore Linen Works: additional warehouse.
Dundee.—Works, Constitution Street: extension, for Messrs. W. C. Grant & Co., Ltd.
Edinburgh.—No. 18 Greenside Lane and Marshall's Court: conversion into workshops for the Incorporated Soldiers' and Sailors' Help Society.
Glasgow.—Sheet Mill, Petershill Road: extension, for Messrs. F. Braby & Co., Ltd.
No. 197 Broomloan Road, Govan: addition, for Messrs. George Christie, Ltd.
Works, Houldsworth Street: addition, for Messrs. D. Carlaw & Sons.
Works, Shuna Street: extension for the Cassal Cyanide Co., Ltd.
No. 52 Bellfield Road: workshop, offices, &c., for Messrs. Andrew Brown & Sons.
Stirling.—Twelve houses, Main Street, Cambuskenneth, for the Cambuskenneth Building Company.

IRELAND.

Belfast.—Picture Palace, Haliday's Road. Mr. C. A. Aickin, architect, Rosemary Street. Mr. I. Copeland, contractor, Newington Street.
Dublin.—Trinity College: addition to the School of Pathology. Messrs. W. M. Mitchell & Sons, architects, 18 South Frederick Street.
Three shops and houses, Dorset Street, for Messrs. A. Findlater & Co. Mr. C. H. Ashworth, F.R.I.B.A., F.R.I.A.I., architect, 12 and 13 William Street.
Warehouse, John Street: additions, for Messrs. Garratt. Messrs. Batchelor (F.R.I.B.A.) & Hicks, FF.R.I.A.I., architects, 86 Merrion Square South. Messrs. S. H. Bolton & Sons, contractors, 156 Rathmines Road.
Lisdoonan.—Curate's house. Mr. J. F. McGahon (of Dundalk), architect.

THE Archbishop of York on Tuesday last consecrated the new parish church of St. Mary, Sculcoates. The new church takes the place of an old one, which has been demolished, and although it is not yet completed, the choir and the portion of the nave, which have been consecrated for public worship, are sufficient to convey a striking impression of the architectural beauty of the building, which has been designed by Mr. Temple Moore, the London architect. There is at present accommodation for 600 people, and this will be increased to 800 when the western part of the structure is completed. The cost of the work already done is over £5,800.

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CORRESPONDENCE INVITED.

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THE ARCHITECT

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FORTHCOMING EVENTS.

Wednesday, July 5.

Royal Archæological Institute: Annual General Meeting (to be followed by a lecture entitled "Some Cheshire Churches," by Mr. F. E. Howard), in the apartments of the Society of Antiquaries, Burlington House, W., at 4.30 P.M.

Friday, July 7.

Royal Sanitary Institute: Meeting in Manchester and visit to Manchester Co-operative Wholesale Society's Works, Crumpsall, at 2.30 P.M.

SCIENCE AND EDUCATION.

THERE can be no doubt that we are waking up to the fact that if we, British, are to hold our own amongst the nations of the world in the future, the near future as reckoned in the life of nations—after the war—we must be a more scientific community than our past haphazard, individualistic methods, or want of method, have made us hitherto. We realise that the great difficulty we are experiencing in overcoming our present enemies is due to their superior science, science in research, science in organisation, science in preparation, science in application. So on all sides we find put before us admonitions to be more scientific in many varied departments of national life.

Thus in a recent number of the "Journal of the Royal Society of Arts" we have a paper by Dr. J. A. Fleming, M.A., F.R.S., on the "Place of science in education." Like all specialists, Dr. Fleming advocates the system of education which would best prepare those who are hereafter to come under his special instruction. Education may always be regarded from either of two different standpoints; general training and mental development on the one hand or special preparation for a particular activity on the other.

In elementary education it cannot be questioned that the general training and development of mental faculties is the only right course to pursue, and that the special training for a particular calling should commence at a later period. Exactly the point when this later period is to be entered is one on which educationists are apt to differ.

Dr. Fleming's suggestion for secondary or public school education is directed against what scientists are much given to affirm, the preponderance of the time spent at present over the grammar and literature of Latin and Greek, and he asserts that there are four great groups of educational subjects which should be put on an exactly equal footing, and to each of which should be allotted a quarter of the whole working time of the schoolboy. These, he says, are (1) Language and literature, considered chiefly as a means of expressing thought and experience; (2) Science or a knowledge of the facts and laws of the physical universe; (3) Mathematics and graphics, or a study of number and form, including arithmetic, geometry and algebra, and drawing in various forms geometrical and free hand; (4) Civics, or the preparation for citizenship, which includes history, both of the world and of the native country, elementary political economy, religious or ethical instruction, elocution, and military drill or exercises.

We may briefly consider this suggestion in regard to its value as a means of mental training, whether general or special. In order to do so we must remember the two distinct functions of mind, the analytic and the synthetic. In a well-balanced scheme of general education, which we may assume it will be granted should be that adopted for the mental development of the schoolboy, both of these functions should be considered of equal importance.

Now it will be noticed that Dr. Fleming defines science as a knowledge of the facts and laws of the physical universe. By this definition of the scope of the scientific study of the schoolboy he limits the mental training to the analytic function of mind, which amongst scientists is too apt to become abnormally developed. In a highly interesting and entertaining book * by Professor R. A. Gregory, just published, which is written rather in advocacy of scientific study, but on which we will not now introduce further discussion, occurs this truthful admission: "The scientific mind seeks continually for natural revelations whether they can be applied to arts and industries or not. The delight is in the chase, and it ceases with the capture."

The fourth of Dr. Fleming's educational groups is negligible in respect of mental training, being devoted principally to character and corporeal faculties; but what little there is, is devoted to the analytic function. Mathematics and graphics, the Doctor's third group, are essentially training for the scientific habit of mind, and, in a schoolboy's standard, at any rate, do not touch the synthetic function. Thus we are left for what education this may receive to group (1) Language and literature, considered chiefly as a means of expressing thought and experience, that is, confined almost entirely to the schoolboy's native speech, for no matter whether the foreign language be a live or a dead one, there is a tremendous amount of time to be spent in drudgery and hard work before a schoolboy's acquaintance with French, German, Spanish, Italian, or Russian would enable him to express thought.

Dr. Fleming's suggestion for the division of a schoolboy's time is thus only plausibly fair to the pupil whose future occupation and destiny is not defined. It makes no provision for the author, the artist, the inventor, the organiser, and but an inadequate one for the scientist who is prepared to apply his knowlege to arts and industries.

When we speak of science as being of vital importance to the future success of the British Empire let us be clear that we have in our view applied science, science usefully directed by minds whose synthetic function is adequately developed, not the science of the seeker after knowledge whose delight is only in the chase and ceases with the capture.

Whilst we freely admit that science and scientific knowledge is daily becoming of more importance to the architect, we should strongly object to such an arrangement of the curricula of our public schools as would, like Dr. Fleming's, repress all inclination of the schoolboy towards art or invention, would stifle imagination and deaden all appreciation of beauty whether of form, of language, or of thought.

With one suggestion in Dr. Fleming's paper we are in accord, and that is the right use of the cinematograph. The Architectural Association has already employed this means of instructing young architectural students in the operations of craftsmen in the building trade. But the cinematograph essentially requires a right use. It must not be introduced simply as an amusing interlude to work at the drawing-board, but the motions photographed must be carefully selected and lucidly explained so that the students may thoroughly grasp what is being done and how, and why it is done as it is.

* "Discovery, or the Spirit and Service of Science." By R. A. Gregory. (London: Macmillan & Co. 5s. net.)

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We referred in an earlier passage to Professor R. A. Gregory's book on "Discovery, or the spirit and service of science." This contains a record, popularly written in every-day language, of many of the achievements of scientific investigators selected particularly with a view to showing that "Scientific investigation is not usually undertaken with personal profit in view, and the discoveries to which it leads are not jealously kept within the precincts of the temple, but are offered freely to the world: self-help thus giving place to the higher attribute of help for others." We have accordingly interesting human pictures of devoted scientific investigators whose labours have been performed under the stimulus of a pure desire for knowledge or of an altruistic endeavour to benefit the human race. "In substance the book thus largely consists of selected testimony."

NOTES AND COMMENTS.

THE discussion concerning Charing Cross Bridge goes merrily on in the "Observer"; much of it, naturally, is but a repetition, in other words, of the arguments adduced by Sir Aston Webb in opening the ball, but there emerge some salient points as to which difference of opinion may legitimately exist.

The strongest point for the demolition of the "red-oxide Behemoth" is the defence of Sir Francis Dent, the General Manager of the South-Eastern and Chatham Railway. He asserts that the bridge is overstrained, and that the only way in which it can be safely used is by carefully running trains with reduced loads as at present on only half of it at a time, and after the war, when fully-loaded trains will be required, only one at a time can be run. What a triumph of engineering! A bridge with capacity for four trains at a time but strength only for one.

So £170,000 is proposed to be spent on patching up the crazy old structure for a time. Surely every man of common sense knows that a rotten iron bridge can never be made new and strong by patching. The only sensible and truly economical proceeding is to scrap the lot and construct a new one.

Sir Francis Dent assumes that, "obviously a new station on the Surrey side of the river and a new road bridge over the Thames must be completed before the existing station at Charing Cross is closed." Here again there is an attempt to bolster up an egregious mistake. The S.E. and C.R. has no less than seven distinct points for delivery of passengers to central London: Charing Cross, Waterloo, Cannon Street, London Bridge, St. Paul's, Ludgate Hill, and Holborn Viaduct; a hideous error in policy of past boards of directors.

These stations are totally unnecessary for internal or local traffic in these days of motor-bus and tube services, and as termini, half of them might be scrapped with advantage. Particularly is the co-existence of Cannon Street and Charing Cross an anachronism.

Sir Francis Dent tries to enlist public sympathy for his company's present proposal by drawing a picture of the inconvenience to the working classes and business people who use Charing Cross Station at the busiest hours, but we fancy the L.C.C. trams and the Bakerloo tube are quite capable of removing that inconvenience if those passengers were landed at Waterloo instead of Charing Cross. As a matter of fact, Charing Cross Station is not by any means a necessity, and very little inconvenience even would be caused if it were closed to-morrow. Hence the expenditure of £170,000 in patching it up for a few years is sheer waste of money, a bagatelle it is true to the directors of the S.E. and C.R. who have squandered millions in foolish policy and bad engineering.

The erection of a memorial to Lord Kitchener arouses speculation as to its locale, and there is a great deal to be said in favour of St. Paul's Cathedral. As an article in the "Daily Telegraph" puts it, Westminster Abbey cherishes the remains of many of the nation's greatest kings, statesmen, poets, and philosophers, as well as some of her noblest sailors and soldiers, but St. Paul's has come to be looked upon more and more as the Valhalla of Britain's greatest servants on the fields and seas of war. Here are the memorials to Nelson, Wellington, Sir John Moore, Sir Henry Lawrence, Sir Charles Napier, and General Gordon, and here in due time are to be erected monuments to Viscount Wolseley and Earl Roberts, who are buried in the crypt. While Westminster Abbey is crowded, and, it has often been said, overcrowded, with memorials, St. Paul's has ample space for the purpose.

A proposition that the State should immediately undertake housing reform on a comprehensive scale by making substantial annual grants, free of interest, to local authorities for the purpose of building better houses was put before the Secretary for Scotland by a deputation from the Glasgow Labour Party Housing Association, which waited upon him in Glasgow on Saturday. The deputation asked that the Government should grant in the first year of the scheme £1,000,000 for improved housing in Glasgow, and that the grant should be continued in amounts that would diminish in proportion to the increase in revenue for a period of sixty years. The grants for the sixty-one years' duration of the scheme, it was stated, would work out at an average of £500,000 per year. The deputation pointed out that the cost of such a scheme, applied to the whole of Scotland, in its first and most expensive year, would be only equivalent to one day's expenditure on the war. Mr. M'Kinnon Wood, in his reply, expressed the view that the scheme, which would involve an expenditure for the whole of the country of £50,000,000 in the first year, was not likely to commend itself to the Chancellor of the Exchequer and the Government. He agreed that the housing conditions in Glasgow were extremely unsatisfactory, and that the problem of housing was one of the most urgent and important that the Government would have to deal with after the war. Meanwhile the Corporation of Glasgow, through its City Improvements Department, is initiating a practical and promising experiment in the housing of the poorest class of workers by the construction of one-room flats to be let furnished at a rent of 6*s*. or 7*s*. a week, according to the size of the room, for which is included rates, electric light, and the use of a washhouse, tenants providing their own coal. The scheme is expected to be self-supporting, and the present experiment comprises two blocks of flats containing forty-eight tenements.

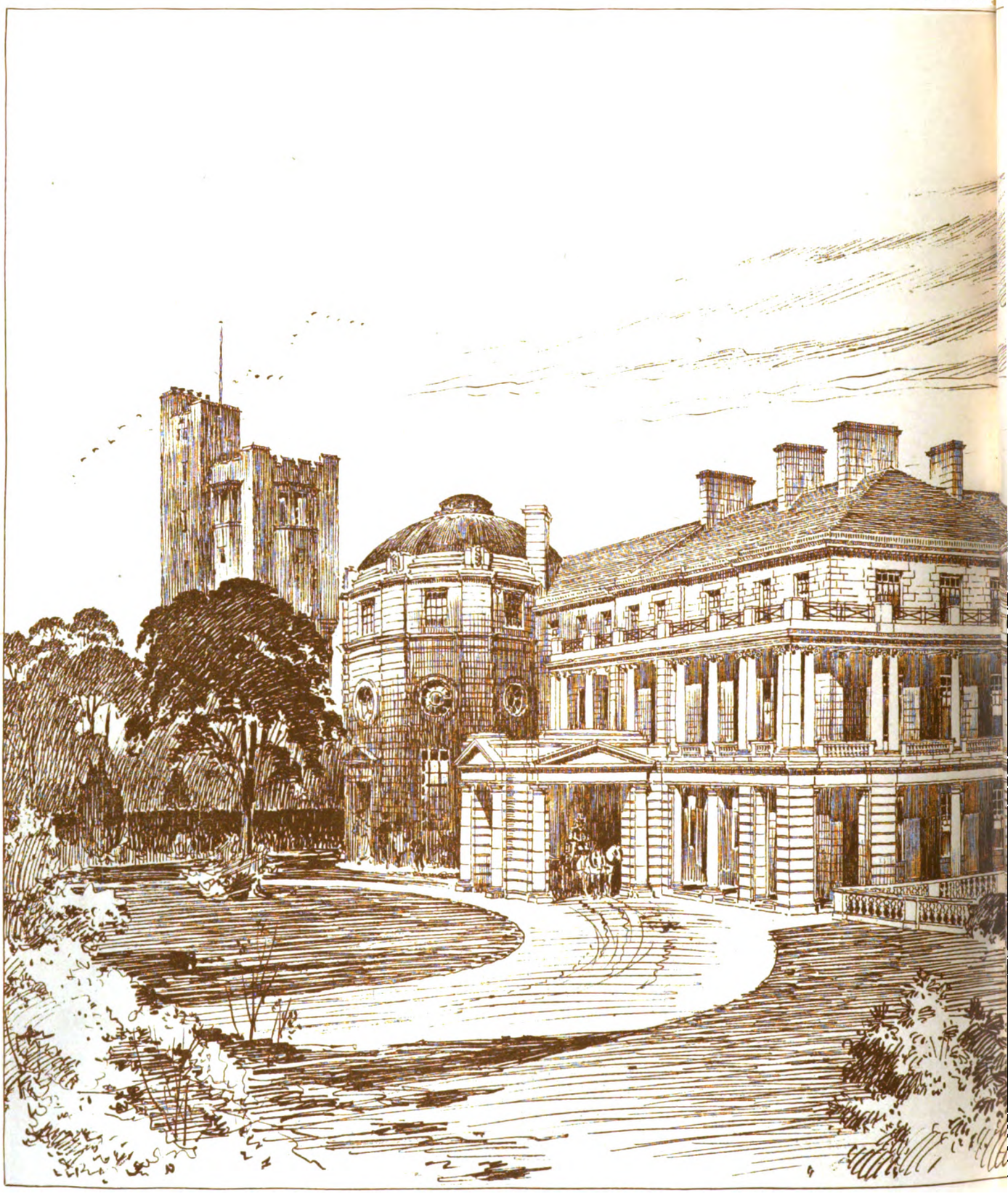
In the erection of the new Swedenborgian cathedral at Bryn Athyn, Pennsylvania, an interesting revolt against modern machine-aided building methods is intended under the direction of America's leading ecclesiastical architect, Mr. Ralph Adams Cram. There will not be two stones alike in the whole structure; there will be continued variety in capitals and supports, and specific variations in all arches and windows. All straight lines have also been avoided in step and column, in rafter and window casing. The "Philadelphia Ledger" presents an account of this challenge to twentieth-century materialism from which we quote: "Every part of the work is by hand. Stone is quarried and cut right on the ground. Tremendous oak rafters, 2 by 3 feet in thickness and 30 feet long, to be used in supporting the roof, were cut on Mr. Pitcairn's property a year ago, and fashioned by the hands of skilful craftsmen. No steel or iron, not even a supporting beam or a nail—is to be found anywhere in the building. Wherever joining is necessary oak pins will be used. Plaster, also, has been prohibited —everything in fact of modern invention that could in any way destroy the medieval purity of construction."

The text is issued of the Bill introduced in the House of Commons by the Solicitor-General to make provision with respect to the possession and acquisition of land for war purposes, and the "Daily Telegraph" gives the following précis of its contents. In an accompanying

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HAGGERSTON CASTL

MR. JAMES B. DUNN

(Royal Scottish Academy, 1915.)

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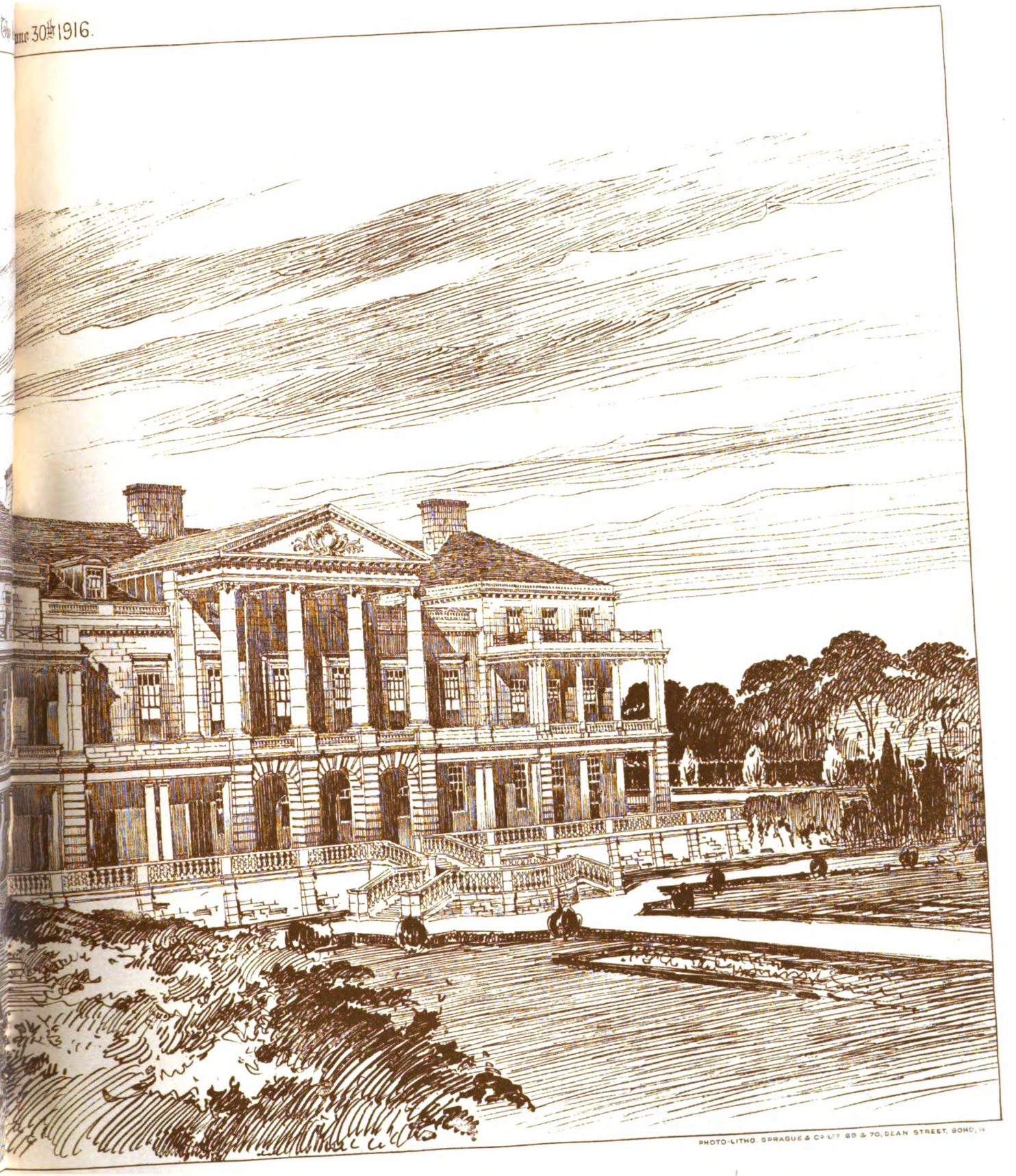


PHOTO-LITHO. SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.

...E. NORTHUMBERLAND.

... F.R.I.B.A., Architect.

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memorandum it is explained that the main object of the measure is to protect the State against loss arising from the fact that in the emergency created by the war it has been necessary to erect War Office huts, aircraft sheds, munition factories, and other buildings, wholly or partly at the expense of the State, on land belonging to persons who would, in the absence of special statutory provision, be enabled at the end of the war to claim that the buildings belonged to them as having become attached to the freehold.

It is therefore proposed to authorise the compulsory acquisition of (a) land of which possession has been taken for purposes connected with the war; (b) land on which buildings have been erected wholly at the expense of the State; (c) land on which buildings have been erected partly at the expense of the State; and (d) adjoining land necessary for the proper utilisation of the areas acquired. As regards (c) and (d), this power will be exercised only with the consent of the Railway and Canal Commission. When acquired the land may either be held and used for munition factories or otherwise, or it may be sold with the buildings upon it, so that the State may recover some part at any rate of the expenditure on the buildings.

Compensation or purchase money for land acquired will, failing agreement, be determined by the Railway and Canal Commission, who will have power to call in the aid of assessors. The Land Clauses Acts will apply, but modifications are introduced to prevent owners of land acquired and of neighbouring lands benefiting by the improvement in value of their lands resulting from the expenditure of public money thereon.

Further, the Bill enables the Crown to continue for a limited time after the war (three years, with a possible extension for another four years) in possession of land occupied for defence purposes. When the troops return home it will not be possible to discharge them all immediately, and in the meantime there may be greater difficulty in providing accommodation than there is during the war. Compensation for such continued occupation is, failing agreement, to be assessed by the Railway and Canal Commission.

To meet cases where buildings have been erected wholly or partly at the expense of the State on lands not belonging to the Government, and it is not desired to purchase such lands outright, power is taken to remove the buildings, or the machinery, plant, and fixtures therein, at any time while the Government is in possession of the lands, subject to the provisions safeguarding other parties who may also have contributed, or with whom there are special agreements; the land being restored to its original condition or compensation being paid for disturbance.

In some cases railways and tramways have been laid along highways, and supplies of water, light, heat, or power have been furnished, either without statutory authority or under the Defence of the Realm Acts, which would cease to have effect after the war. The continuance of the facilities is of vital importance to the factories and other premises concerned; the Bill, therefore, gives the requisite sanction.

To-morrow, Saturday, the Edinburgh Architectural Association will make its annual excursion to Perth and Scone, when visits will be paid to:—

(1) *St. John's Church.*—The parish church of St. John the Baptist is the only ancient religious structure remaining in Perth (and it has been greatly changed). Serves its original purpose of parish church of the town, but has, in modern times, been divided by walls to form three places of worship. A church existed in the twelfth century of which no trace now remains, and no part of the present church is older than the beginning of the fifteenth century. In 1448 the east end of church is referred to in contemporary documents as the new choir. The church consists of a choir and nave with north and south aisles and transepts without aisles. Total length within walls about 191 feet, breadth about 59 feet. Nave and choir of almost equal length and each divided into five bays. The nave has no triforium nor clerestory, there being a deep blank wall above the arcade arches. There are indications of a western tower having been contemplated and afterwards abandoned. West part of church completed by 1489 and probably built by Walter Merlioune, the mason, who is said to have built the Palace at Stirling Castle. Central tower about same period and restored about sixty years ago. Exterior of church considerably altered at various times. New parapets added to choir and wooden dormer windows inserted in roof of nave. Peculiarity of church is absence of vaulting in aisles. On north side there is a beautifully groined vaulted porch. There are some interesting church vessels and other articles.—(Macgibbon & Ross's "Ecclesiastical Architecture of Scotland.")

(2) *St. Ninian's (Episcopal) Cathedral.*—Early middle pointed (architect, Butterfield). Choir and transepts built 1850; nave, with Galilee porch at west end, 1890. Chancel remodelled, with aisles added, and chapter-house and vestries added 1900 (architect, F. L. Pearson, London). Lady chapel added 1909 (architect, F. L. Pearson).

(3) *Monument in Kinnoull Church.*—Old church of Kinnoull is on opposite side of Tay from Perth. Has almost entirely disappeared except aisle, which was attached to the church, which contains an interesting seventeenth-century monument to the first Earl of Kinnoull, who was Chancellor of Scotland. The monument was erected in 1635 and has a richly sculptured dado from which rises three twisted and carved columns surmounted by a carved entablature supporting a heraldic shield with figures on each side. Principal feature is the life-sized statue of the Earl.

(4) *The Grounds and Gardens of Scone Palace.*—Scone, the Coronation place of the Scottish kings from 1153 to 1488, and afterwards of Charles II. in 1651. Originally an Augustinian abbey demolished by the mob in 1559. The old palace of the Viscounts Stormont, in which the Old Pretender lived for three weeks in 1716, and also visited by Prince Charles Edward in 1745, has given place to a large modern castellated mansion built about 1803, and designed by Atkinson, a fashionable English architect. It is the residence of the Earl of Mansfield, the descendant of the Stormonts. There is an old cross, an arched gateway, and a mote on which formerly stood the old church of Scone.

ILLUSTRATIONS.

HAGGERSTON CASTLE, NORTHUMBERLAND.

THE large detailed half-inch scale perspective of this mansion was exhibited in last year's Royal Scottish Academy. The castle dates back to the latter part of the fourteenth century, and it was in its early days the seat of the Haggerstone family. In the second decade of the seventeenth century it was practically destroyed by fire, except for the principal tower.

Another fire, which broke out in 1911, doomed the new mansion, which had been rebuilt seventeen years previously by the present owner, Mr. Christopher J. Leyland, into whose family the castle and estate passed in 1858.

Under the direction and personal supervision of Mr. James B. Dunn, F.R.I.B.A., work was at once begun on the damaged structure; and at the same time the architect, with the consent of the proprietor, effected a number of improvements. A new porte-cochère was added, and the entire portions of the south and west elevations have been redesigned. As a result of the fire the fine domed entrance was completely destroyed, necessitating the reconstruction of the upper portion entirely. At the same time the old slated roof was replaced by a new copper dome.

The architect has also carried out extensive alterations in the grounds, a formal garden being laid out,

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and an old disused lodge has been rebuilt to occupy a central situation, and was transformed into a tea house. For the new garden wall mixtures of white, grey, and pink stones obtained from "Hailes" Quarry, near Edinburgh, were used; these being employed also for the random paving.

The great tower, constructed with other additions from the designs and under the direction of Mr. Norman Shaw, R.A., serves the purposes of a water-tower for the mansion, which has three distinct sources of supply. The water storage is confined in a number of big iron tanks.

A large number of contractors were employed, the principal firms engaged being:—Messrs. Robert Hall & Co., Galashiels, for masonry and joinery; Mr. Leonard Grandison, Peebles, plain plastering; Mr. George P. Bankart (Messrs. George Jackson & Sons), Rathbone Place, W., ornamental plaster ceilings; Messrs. W. Richardson & Co., Darlington, heating arrangements; Messrs. John Orr & Sons, Glasgow, painting; and five Edinburgh contractors, Messrs. Redpath, Brown & Co., Ltd., structural steel work; Messrs. William Anderson & Son, slater work; Mr. Hugh Weir, plumbing; Messrs. Scott, Morton & Co., finishings of main staircase and other panelling; and Messrs. John Taylor & Sons, Ltd., panelling of main hall. The clerk of works was Mr. Alexander Auld.

"THE MEAD," WRITTLE, ESSEX.

In order to demonstrate the possibility of building cheaply and substantially, this house was designed by Mr. Reginald A. Rix, A.R.I.B.A., for his own use, and to show what could be done to secure the advantages of a country house at the lowest possible cost.

The external walls are covered partly with smooth cement left in its natural colour, and partly with hanging tiles. These, as well as the roof tiles, are sand-faced and very dark. The hips are finished with half-round tiles to match.

As regards the internal scheme of decoration, the keynote is simplicity. Throughout woodwork is freely used, but everywhere square; and there are no mouldings. The doors are plain boarded, and the windows are casements divided into squares by square sash-bars. No putty is used, the bars being secured with wood fillets. An important point in the plans is the large living-room, from which direct access is obtainable to the dining-room by means of folding-doors, and both these apartments open on to a verandah, which in the summer forms an extra sitting-room. The walls of the dining-room are divided by 7-inch by ¾-inch panels up to frieze height, above which is a plate-shelf supported at intervals by shaped brackets. The panels formed by the uprights are hung with dark green cloth, the portion above mantel being panelled to harmonise with the general scheme. A similar panelling treatment is carried out in the first-named room, except that it does not extend beyond dado height. The ingle-nook has solid posts and beams, and is panelled; the lower ones being filled in with cloth, and the upper panels with plaster. Here there is an open fireplace which is built up in red bricks, with stone hearth and hobs. The grate is covered with a large copper canopy, and on each side of the fireplace is a seat.

All the ground floors are laid with polished pitch-pine blocks, which after a short time become a delightful colour. The ceilings of sitting-rooms have heavy wood beams, with the joists showing. Both externally and internally the woodwork is treated in dark Solignum, except in the case of the bathroom, lavatory, and offices, where it is white enamel. The interior plaster is in all cases distempered in white. A noticeable feature of the house is the miniature gallery overlooking the hall, with small wood arcade, the ceiling over it being also of wood.

Messrs. Peppiatt & Cooper, Ltd., of High Holborn, London, W.C., were the general contractors.

OXFORD COLLEGE SERIES.—NOS. 173 & 174.—MANCHESTER COLLEGE.

OUR plates this week show the hall recently built from the designs of Mr. Percy Scott Worthington, M.A., F.R.I.B.A., of which a description appeared in our issue of last week.

CIVIC STUDY IN CIVIC DESIGN.*

By PATRICK ABERCROMBIE, M.A., A.R.I.B.A.,
University of Liverpool.

No one, it is to be supposed, would seriously deny that it is our practice as a nation to embark upon great undertakings with inadequate preparation and to achieve eventually our object, by the grace of Providence, after numerous mistakes. Though this national method, or want of method, may have been successful so far, it is only natural that attempts should be made from time to time to map out a more orderly means of progression.

Into town planning as a general subject it cannot be said that this country plunged without very considerable preparation: for years before our Act was passed organised visits had been paid to the Continent where the practice of civic design had not been suffocated by the industrial revolution, as with us; and before anyone got to work on actual schemes several general treatises had been published and at least one notable Continental report issued by a municipality.

But it is in the conduct of individual town-planning schemes under the Act that some tinge of our national habit of unpreparedness appears; the very nature of the Act itself, which proceeds by means of individual schemes, isolated by red lines, appears to encourage a piecemeal treatment of the subject; and the intricacies of a new piece of legislation naturally tend to a pre-occupation with the statutory stages of its procedure. At none of these stages is there any necessity to discover what preparation or general considerations have preceded the particular scheme, except in so far as it is obligatory to show that the land is likely to be developed in the near future. That such preliminary thought is given in many cases is undoubted; but it may not be amiss to attempt to methodise the natural progression of study under which town planning must proceed, if full justice is to be done to the complexity of the problem and that degree of comprehensiveness attained which is the distinctive difference between town planning of the present day and in the past. There is no claim that the method to be set forth is an original or novel suggestion—it has certainly been adopted by many of those who have produced schemes under the Act; but few will deny that it has been applied unconsciously rather than as an ordered method of progress.

The three stages, then, to be considered are:—(1) The civic survey; (2) the comprehensive town plan; (3) town-planning schemes for definite areas. It is easy to think of a case where this three-fold progression has been adopted unconsciously with satisfactory results: a small isolated country town, whose growth has been somewhat quickened of recent years, decides to make use of the Town Planning Act for the third stage—a scheme for a definite area. The matter is in the hands of the borough surveyor, who, knowing his own town as every borough surveyor of course does, sees no need for the production of a formal civic survey or general town plan, for the simple reason that both these exist at the back of his head; his town is of a size easily graspable without graphic representation—he knows which roads are adequate for the traffic and which are not—how much overcrowding there is—the relation between his proposed improvements and land values—and, as to open spaces, he is aware that the country is within a few minutes' walk of everyone.

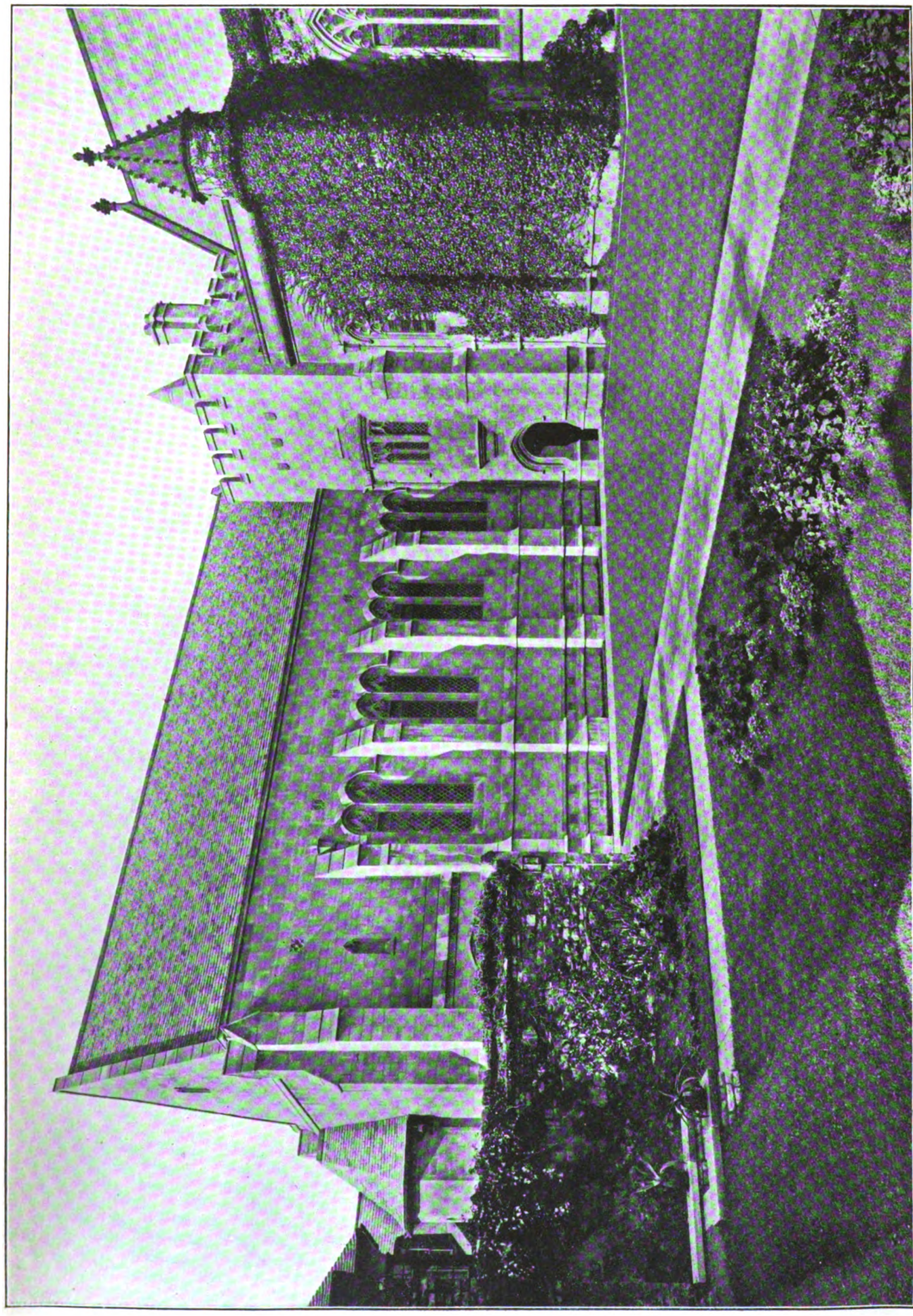
But our old-fashioned market town may be in a more

* A Paper prepared for the 43rd Annual General Meeting and Conference of the Institution of Municipal and County Engineers at Blackpool on June 29 and 30 and July 1.

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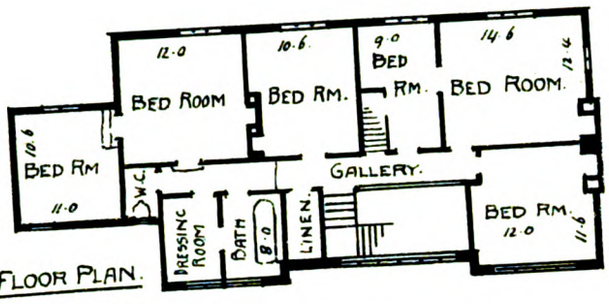
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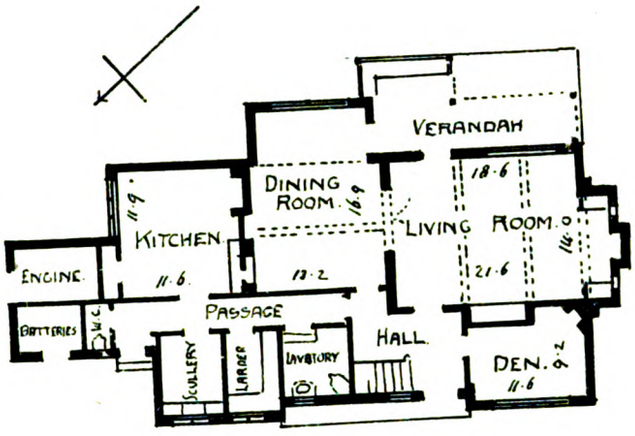


"THE MEAD,"

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FIRST FLOOR PLAN.



GROUND FLOOR PLAN.



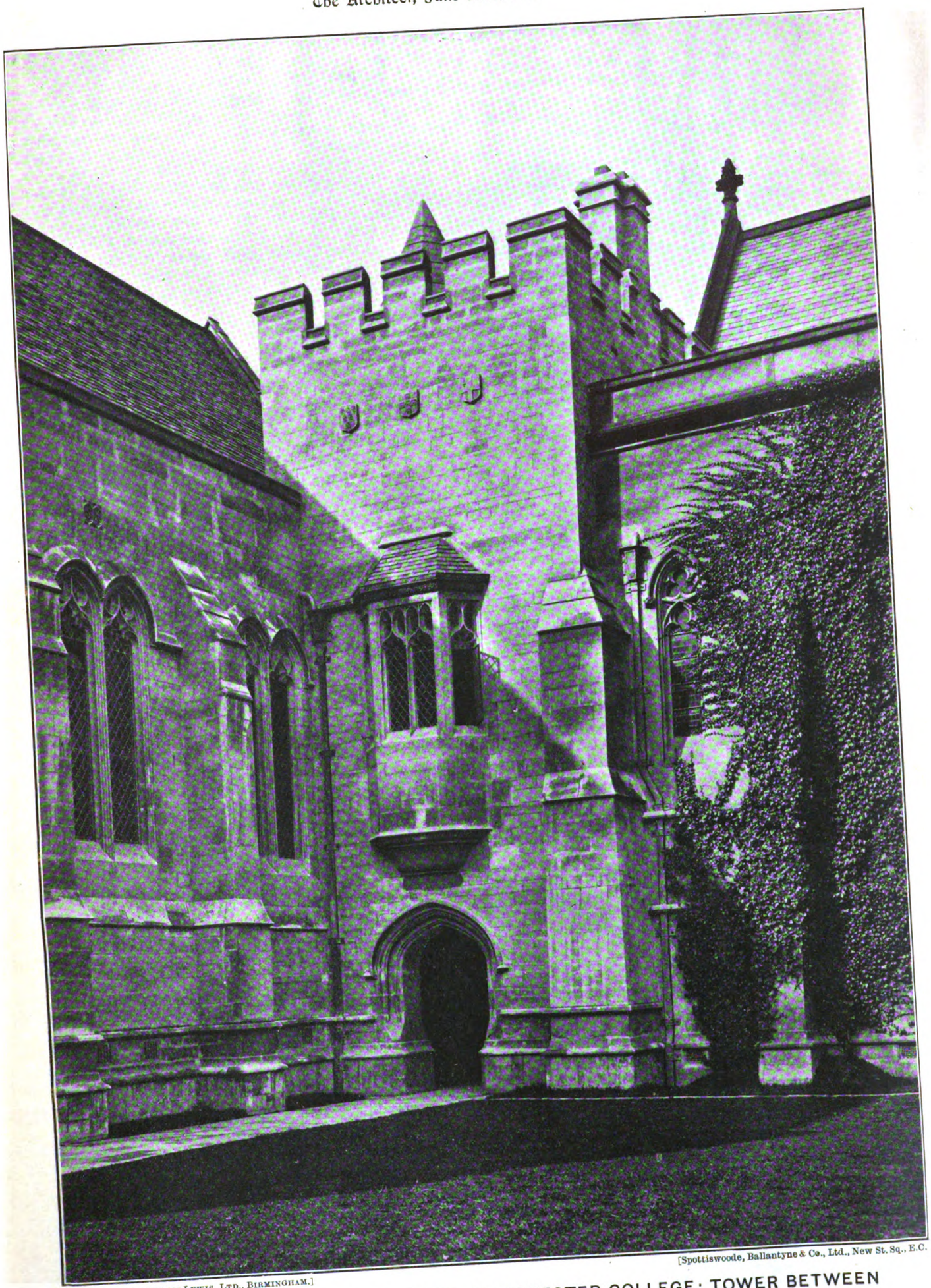
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WRITTLE, ESSEX.

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definitely transitional stage, threatened with an industrial development which it does not wish to avert but at the same time was quite happy without. Suppose it to be at the same time an ancient cathedral city, owing a large part of its prosperity to its attractiveness to visitors; its four main cross-roads lined with old buildings, an asset of permanent value; trams have been laid on the cross-roads, but all thought of widening is out of the question. Another cause of the city's prosperity is a river much used for pleasure parties. Upon this peaceful prosperous community, battening on Americans and visitors from distant industrial centres, has descended a sudden industrial incursion. Part of this is encamped just outside its municipal boundary, near a convenient waterway; a squalid jerry-built township is springing up in juxtaposition to one of its best residential suburbs; added to this, a large industrial population working some miles away prefers to congest the cheerful city's slums rather than to live in the dull country. Here, then, is a case for serious study of existing conditions and a prophetic town plan; it behoves that city to take deep thought for its whole future; it is by no means sufficient to go in for a simple town-planning scheme on one side of a protective nature. What is to be done, in view of a possible doubled population and the central streets, not to be subjected to the usual panacea of widening, already congested?

If the complexity of the problem of this single town suggests the need for general study and planning before separate schemes are initiated, how much the more is this essential in those districts where many towns are found closely associated by community of interests and natural regional conformation? Here it is impossible, or, rather, municipally immoral, for one town to plan for itself without consulting with its neighbours. South Lancashire, South Yorkshire, and the Birmingham district are three such urban agglomerations, in which parochial town planning would prove a fatal blunder.

The Metropolitan area, though, of course, unique as a problem, presents many of the same features as these provincial districts, and it is also fortunate that here we can judge of the value of a preliminary survey and a general plan, though it refers only to a single aspect—namely, traffic. The way in which London has tackled its traffic problem is also an apt illustration of the disorderly method upon which we ordinarily proceed. The Metropolis was lucky in having this particular section of its civic survey carried out for it most efficiently by a Government Department, the London traffic branch of the Board of Trade, which also made general suggestions for a proposed traffic plan. Shortly after this traffic plan had been first published, some thirty local authorities in the area comprised by the survey began preparing town-planning schemes for either their whole areas or portions of them. It was not until they had been some time at work upon their separate schemes that it was decided to interpose between them and the survey the necessary link of a comprehensive traffic scheme for Greater London. This has at length been prepared at a series of sectional conferences, whose constitution and working might well be studied by other groups of local authorities who should be similarly associated for purposes of general town planning. Finally while these sectional conferences have been meeting and settling the traffic routes, the London Society has been producing a town plan for the Metropolis embodying these traffic proposals, together with many other suggestions for open spaces, &c.

When this plan is published, the local authorities will have plenty of ideas to go upon in their individual schemes, together with some prospect of financial help for those features which affect the community at large: there should, in a word, be no danger of lapsing into the production of parochial projects. But it is a pity that the general plan did not precede the separate schemes, upon which much work has already been spent.

It is not every area which is so under the eye of the Government that it can get its civic survey (or even a single phase of it) prepared by a national department. But it has so happened that the war itself has brought about the production of surveys for two other districts—South Lancashire and South Yorkshire—as a means of prevention of distress among surveyors and architects; and it is to be hoped that the results of these labours will further demonstrate the necessity for conjoint study by groups of urban communities.

In these war-time surveys, a sharp distinction, not found in the London Traffic Survey, is made between this first stage, the study of existing conditions, and the second, the proposals for future improvement. Another case in which this division should be clearly maintained is that in which it has been decided to hold a competition, rather than appoint an official or a commission to prepare the general town plan. The competitors should be furnished with reproductions of, or have access to a completely carried out civic survey, as data upon which to base their proposals. Unfortunately this is rarely done; competitors are left to fish out their data from medical officers' returns, and, if they are lucky, some tramway committee's report, and possibly a map prepared by some local playground society. By reason of neglect in the furnishing of data, competitions in this country are usually rendered of slight value.

It is not necessary on this occasion to schedule the headings under which a civic survey should be grouped: everyone who has prepared one, whether formally or informally, knows what data are necessary upon which to build town planning and to what extent the emphasis on different phases varies in each case: for example, the historic aspect sometimes is of first importance, at others practically negligible. But it is worth while pointing out that a civic survey when formally compiled has another use apart from that to which the technician will put it: to the general public a graphic statement of existing conditions will come in many cases as a revelation, and in town planning the backing of public opinion, as epitomised in the eagerness of the town planning committee of the corporation, is of the utmost value. This latter use will amply justify the production of a civic survey for single towns, however familiar its details may be to the official mind.

With regard to the second stage of town-planning progress, it is obvious that where it is prepared for a district containing many urban units, it can only deal with certain aspects, such as traffic, open spaces and the preservation of natural features, water supply, sewage disposal, &c. The London plan, before mentioned, will give us a good idea of the scope of such interurban proposals. It is to be hoped that its example will be followed elsewhere and that South Lancashire will have its Road-Traffic Board and Park Commission: and it must be remembered that the joint acquisition and control of open spaces has been practised in the United States for many years, where the Boston Park Board acts for 38 municipal councils.

For separate municipalities the whole range of town-planning activities can be dealt with in the form of general proposals. We cannot indeed at the moment point to any complete published example in this country, but fortunately instead of turning to the Continent or the United States, we can learn from one of our own Colonies. The recently published Report of the Federal Plan Commission on a general plan for the cities of Ottawa and Hull is an achievement of which Canada should be proud. Here, as is frequently convenient in a single (or rather dual) town, the first and second stages—civic survey and comprehensive plan—are presented simultaneously; that is to say, the survey diagrams of existing conditions in each section precede the future proposals.

The great advantage of this general plan stage is that it gives the opportunity for a spark of imagination to lighten up our painstaking humdrum work. This is much more likely to occur at this stage than while we are engaged in drafting water-tight clauses for a scheme and producing plans designed to give away our intentions as little as possible.

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And for this reason it is sometimes desirable that this general plan should not be prepared—at any rate if it is to be published—wholly by officials of the city: the example of the London Society's plan is worth noting, where an independent and somewhat irresponsible organisation issues the plan, produced by actual members of the official Sectional Committees, which are determining the direction of the main roads. Again, the Chicago plan was prepared for and financed by a club of business men: when complete, they presented it to the city, which created a Plan Commission to carry it into execution, with of course the necessary modifications.

On the other hand, the Ottawa plan is the work of a commission formally appointed by the Minister of Finance, consisting of six members: the Mayor of Ottawa and Hull, a barrister, an architect, and two other gentlemen. The commission called in a consultant town-planner and a consultant engineer.

Another advantage of the general plan stage is that it makes the planner or the committee of planners definitely decide upon the type of town for which they are working, so that a form of development in consonance with this type may be encouraged, and no attempt made to impose upon it exotic ideals. In Blackpool, such determination of character hardly presents any difficulty: there can be small danger, for example, of its attempting to rival Fleetwood as a port or fishing town; but there might be some danger of Fleetwood wasting its energies in trying to ape the recreational glories of Blackpool.

To sum up, it is contended that in large urban agglomerations a civic survey of existing conditions and a general plan embodying proposals for certain aspects are essential; and the municipalities concerned should appoint joint committees to draft out the main lines of such a plan, following the precedent of the London Traffic Sectional Conferences.

Secondly, that a definite adoption of these two stages as the necessary preliminary to town-planning schemes under the Act is extremely desirable even for the isolated urban community. Furthermore, the value of publicity at these two earlier stages outweighs its drawbacks.

THE USES OF ZINC AND ITS COMPOUNDS.*

By J. C. MOULDEN, A.R.S.M., M.Inst.M.M., Member Australian and American Institutions of Mining Engineers.

(Concluded from last week.)

UNDER the heading of sheet zinc may very properly be placed the filamentous zinc or zinc shavings which are used in considerable quantities for the precipitation of gold and silver from cyanide solutions. This use of the metal plays a most important part in the metallurgy and supply of both of the precious metals named. Circular discs stamped from rolled zinc sheets are threaded on a mandrel, clamped, and placed in a turning lathe. By means of a fine tool traversing the cylinder so formed the zinc is removed in the form of very fine wire or shavings, which in proportion to weight expose a great surface area. These shavings are used in the extractor-boxes of plants employing the cyanide process for extraction of gold and silver from their ores, the highly electro-positive zinc decomposing the double cyanides of gold or silver and potassium or sodium, resulting in the deposition of metallic gold or silver, and the formation of the cyanides of zinc. For this purpose zinc containing a small percentage of lead is the most efficient, as the zinc-lead couple formed thereby accelerates the precipitation.

Zinc is also extensively employed in the metallurgy of gold and silver in the Parkes process for refining of base lead bullion produced from the smelting of gold-silver-and-lead ores. The base bullion, treated in softening furnaces for the prior removal of copper, tin, arsenic, and antimony, is melted in large cast-iron or steel hemispherical kettles; zinc is added and stirred in, when it forms a preferential attachment with some lead to the gold and silver. On cooling down the kettle contents somewhat this alloy rises to the surface as a crust, and is skimmed off, pressed to expel superfluous lead, and the resultant distilled to remove the zinc. There then remains a very rich lead-gold-silver alloy, which is cupelled for the precious metals. The desilverised lead bath still contains a small amount of zinc, which is easily removed by oxidation, either by air or dry steam, and there then remains the soft lead of commerce.

From the two examples given one may see what a really important part zinc plays in the supply of our precious metals, and consequently of finance. There are probably few of us who, when handling a sovereign, pause to reflect that at one stage of its evolution it was quite probably either being deposited from a cyanide solution upon zinc filaments, or alloyed with zinc in course of its dissolution of partnership with lead in a Parkes refinery.

Thus does the humble mouse of the metallurgical world free from its bondage the lion of Finance, and clothe the bare skeleton of Science with the warm flesh of Romance.

Zinc rods ½ in. in diameter and about 7 in. long are consumed in considerable quantities in the Leclanché battery cells used in the telephonic and electric bell installations. There are, indeed, few houses or offices of any importance where such do not exist, and although usually stowed away "out of sight and out of mind" in a dark and dusty corner, they do their work faithfully enough for us. These rods may be cast, rolled, or extruded, and from time to time have to be renewed as they waste away. It has recently been found that fine-zinc rods are much superior to and more economical than those manufactured from ordinary spelter, owing to the absence of "local action" induced by the presence of lead and other impurities. A sample of such a fine-zinc rod produced by extrusion is submitted. At present these rods have not found the universal adoption to which their undoubted economic merits entitle them.

No particularly novel avenues for the consumption of zinc in any great quantity have been opened up in recent years, nor can it be claimed that any are in sight. Galvanising, sheet-rolling, and brass-making utilise the bulk of the spelter produced, and, although no statistics are available, probably in the order named. Its application in the form of zinc sheet roofing has hitherto found but limited scope in England, and any extension in this direction will inevitably meet severe competition from the many new and efficient roofing materials of the "Ruberoid" and other types which have now appeared upon the market.

Zinc Dust, Blue Powder, or Poussière.—This material has already been referred to as collecting in the prolongs attached to the condensers in distillation. When zinc vapour in dilute form in a reducing atmosphere is cooled, or when in enriched form it suffers a sudden drop in temperature, the resultant condenses, not as fluid metal, but in pulverulent form consisting of an infinite number of globules forming a powder. We have an entirely analogous case in the formation of dew as compared with rain. Microscopical examination indicates that each globule has an extremely tenuous coating of oxide which prevents its coalescing with its neighbour when heated to a point exceeding that of molten zinc, and unless this coating be removed by ammonium chloride, or a similar flux, the powder is most difficult to convert to molten metal.

In this form of dust or powder it presents an enormous surface area as compared with its bulk, and constitutes essentially metallic zinc in an extremely fine state of division. As such it exhibits all the properties we might expect, and is one of the most active metallic reducing agents known. It is oxidised readily, and decomposes water or steam; in fact, if wetted when in bulk it will fire, and the mere moisture present in the air will sometimes cause it to ignite. Serious fires and even explosions have been caused in this manner.

* Extract from the Peter Le Neve Foster Prize Essay, printed in full in the "Journal of the Royal Society of Arts," May 23 and June 2.

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Its value for commerce depends upon its content of zinc in the metallic state, and the best of grades contain from 86 per cent. to 92 per cent. as such. It finds extensive use in the dyeing and textile industries as a reducer, and for the removal of copper, arsenic, antimony, &c., from electrolytic solutions contaminated with these metals.

It has latterly found increasing favour as a precipitant in the cyanide process in lieu of zinc shavings, and the small amount of lead it usually contains acts beneficially in promoting more rapid and complete precipitation of the gold and silver.

Probably the most interesting use to which zinc dust has been applied in recent years is to the process of "Sherardising," * or dry galvanising. The articles to be coated are pickled to present chemically clean surfaces, dried, and packed into a clean drum or box with zinc-dust. The drum or other receptacle is put into an oven, gradually heated to the required temperature, and then maintained at that for the requisite period. It is removed, cooled, and, when emptied, the articles are found to have received an even coating of zinc. The temperature required varies with the size and nature of the articles, and may be stated in round figures as from 200° to 400° C.—well under the melting-point of zinc.

The zinc deposited in this manner forms a true alloy at the junction, and becomes really an integral part of the article. It will not, therefore, scale or peel off. The coating given may be varied at will from the thinnest up to 14 oz. per square foot. Such articles as screws, nuts, bolts, and others of more or less complex description can be evenly and thinly covered with a protective covering, without lumps, and without filling crevices and corners. The coating can be highly polished, and is then as bright and attractive as nickel plate, otherwise it has rather a dull frosted-silver effect.

The zinc really roots itself into the metallic surface of the article treated, forming an alloy, and upon that appears to grow particle by particle in an almost molecular manner. The coating is, therefore, of an entirely different nature to the pellicle of zinc obtained by ordinary galvanising, and is much more like an electro-deposit.

The author has experimented in this manner with copper, and finds that the action is most successful, although for obvious reasons the application to this metal is not likely to be of importance, such as would attach to metals which so readily corrode when unprotected, as iron and steel. One very curious fact came out in the experiment—viz., that at quite low temperatures, far below the melting-point of the zinc even, the point of union of the two metals consisted of typical yellow-brass, indicating an interesting case of the diffusion of solid metals. A "Sherardised" penny-piece and other examples are exhibited as specimens.

It is greatly to be regretted that this really beautiful and efficient process has not received the wide use and recognition to which its merits undoubtedly entitle it.

Zinc Compounds.—By far the most important compound of zinc from every point of view is the oxide—ZnO. Zinc, or zinc vapour, burns readily in air, producing the woolly-white substance formerly known as *Lana philosophica*—philosopher's wool. It is an amorphous snow-white material with a soft greasy feel between the fingers. The oxide exists in other forms, such as the native mineral (zincite), which is in a totally different molecular condition. When ignited at a high temperature it shrinks and becomes hard and gritty. It is infusible at all ordinary temperatures, but distinctly volatile at a white heat. Upon heating it assumes a canary-yellow colour, which usually disappears on cooling, but may be retained to some extent with certain varieties.

As used in commerce it is usually prepared—

(*a*) By the combustion of metallic zinc; or

(*b*) By the blowing-up grate method, under which oxidised zinc compounds or ores—such as low-grade calamine, franklinite, etc.—are mixed with coke or anthracite coal and burned in a specially designed furnace on a perforated cast-iron grate with a blast of air directed underneath. The resultant zinc oxide, after passing a combustion chamber and settling flues, is filtered out in a series of linen or woollen bags, whence it is periodically removed by shaking.

As its value depends upon its purity of whiteness, lead, cadmium, and the presence of fuel ash detract largely from it. The first-named method of production is practised largely in Europe, and the latter in the United States, which affords such quantities of the eminently suitable raw materials already referred to. The blow-up oxide so obtained is usually considered as superior even to that resulting from the combustion of zinc.

Impure forms of oxide are obtained in other ways, as in the treatment of highly zincy slags produced in lead smelting, and these, when not too high in lead or cadmium, lend themselves to the production of special grades of spelter, or even fine-zinc, by the ordinary distillation methods. The specimen of zincy concretion from iron blast-furnace work which is exhibited in connection with this paper is no more than an impure form of zinc oxide.

Zinc oxide, with its purity of white and other valuable characteristics, finds to-day great use the world over in paints, pigments, and enamels. It has good body and covering power, is non-poisonous, and is not blackened by sulphuretted hydrogen. It blends well with barium sulphate, which, owing to its cheapness, is a widespread adulterant. The author has purchased certain specimens of guaranteed pure zinc oxide, which on analysis afforded 80 per cent. of barium sulphate. In the trade the oxide is often termed zinc-white. It finds considerable use also in rubber and linoleum manufactures, and in medicine it appears in the common zinc ointment.

Zinc sulphate, sometimes known as zinc vitriol, is usually prepared by the solution of zinc or zincy waste in sulphuric acid and the crystallisation of the salt. So obtained it contains seven molecules of water of crystallisation, and appears as colourless needle crystals with a strong metallic-astringent taste. It is also prepared by the sulphate-roasting of zincy ores, often in heaps, followed by leaching.

It finds use as a mordant in the textile industries and in the manufacture of glue, where its function is that of a clarifying agent and preservative.

In medicine it is employed as an astringent, and a very weak solution forms a common eye lotion. Apropos of this, the author remembers an amusing instance of years ago at Goslar, where an astute and enterprising man sold the ordinary water of the well-known Rammelsberg Mine, in the Hartz Mountains, for this (and other) supposed miraculous virtues. The ordinary water of this mine is well charged with zinc sulphate, and had his local patients only known it they could have had many thousands of gallons for nothing.

The greatest quantity of zinc sulphate finds its utilisation in the manufacture of lithophone, which is a mixture of zinc sulphide and barium sulphate produced by double precipitation employing barium sulphide and zinc sulphate. It is a stable pigment, much cheaper than zinc oxide, but suffers from one grave defect in that it is affected by light and does not retain its purity of white, turning grey, or even greyish-black, in strong sunlight. It recovers its whiteness on being retained in darkness for some time. The manufacture of enamel paints and linoleum absorbs a good deal of lithophone. The basic idea underlying its use at all is to obviate the necessity for the much more costly zinc oxide for which it is a substitute.

Zinc chloride is a waxy, extremely caustic substance obtained usually by the dissolving of zinc-scrap in hydrochloric acid, followed by the evaporation of the solution; the latter is by no means easy if the whole of the water is to be eliminated. It melts easily at 262° C., and at rather over this sublimes with the production of peculiarly irritating fumes.

* "What is Sherardising?" A pamphlet descriptive of the process invented by Sherard Cowper-Coles.

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As a preservative for timber it is well known, and has been much used for railway sleepers, either in combination with creosote or without. The textile industry absorbs material amounts, and it is used in "mercerising" or giving the appearance of silk to cotton goods. It is extraordinarily hygroscopic, and if the solid chloride be exposed to damp it will gradually absorb enough moisture to go into solution. It attacks cellulose when in the form of a strong solution, and one of specific gravity 1.7 boiled with excess of zinc oxide gives an oxychloride which will even dissolve silk.*

Zinc chloride in solution is a powerful disinfectant and germicide, as also is the iodide, which is used in minute quantities. Those who have, at the dentist's hands, been unfortunate enough to receive an application of zinc iodide and iodine will have had every inducement to retain a permanent recollection of the occasion.

Of the evil and debased uses to which our good friend zinc may be put we have only recently had two examples. In the one an etched zinc plate was used to counterfeit the watermark in an extensive forgery of Treasury notes, and this so perfectly, as evidenced by the prosecution, that it was difficult to detect the difference on comparison with a genuine note. In the other, to no stranger or more historically interesting use has zinc surely ever been put than for coinage to replace the nickel currency withdrawn for munitions of war. Yet the Germans have done this in Belgium, and the author has two such coins in his possession, one of the nominal value of 10 centimes and the other of 25.

THE PRODUCTION OF ZINC AND ITS POSITION IN THE METAL MARKETS OF THE WORLD.

Leaving out of account iron and steel, the metals in most common use are, in their order, lead, copper, and zinc. The world's supply of these three is such that in the year 1913—the latest for which figures are available—we had

	English Tons of 2,240 lb.
Lead	1,070,000 (estimated)
Copper	986,500†
Zinc	985,142†

Stated in a ready way, therefore, for every 1,000 tons of lead produced there were 921 tons of copper and 920 tons of zinc. Analysis in this manner will perhaps afford a ready mental concept of the relative position occupied by zinc in the arts and commerce. The close coincidence between the figures for copper and zinc for the year cited is at least remarkable, as indeed between those for all three metals.

Owing to the disturbance caused by the war it is doubtful how far this ratio is to-day strictly preserved; what the position may be at the conclusion of peace, and for some time afterwards, is vouchsafed to none of us to predict in any terms beyond those of mere guess. Much will depend upon the condition in which those great European centres of spelter production—Belgium, Upper Silesia, and Rhineland—are left, coupled with the very considerable extension of the smelting industry which has already taken place in the United States, and is by no means at an end. Russia, Japan, and Holland will almost certainly also figure in material productive increase, although in lesser degree. So far as Britain is concerned we may confidently predict an increase in production, the degree being dependent upon the manner in which the proposition is approached and handled. If certain comprehensive schemes, which have recently been outlined, for the treatment of Imperial ores in the United Kingdom come to fruition, the increase may be great indeed. Imperial matters call for Imperial methods, and any attempt to deal with such in "penny numbers" usually brings its own reward. The commercial metallurgy of zinc is, as we have seen, closely interwoven with that of other base metals such as lead, and that of silver, also with the production of sulphuric acid on a considerable scale; its successful establishment in any given area necessarily takes keen cognisance of this material and fundamental basis.

How far these major schemes may succeed in their object, without the recognition that the subject is of national importance, and calls therefore for the support of the nation, remains to be seen. The war has supplied the much-needed lesson, are we but in position to appreciate it at its proper value and profit thereby.

The world's annual production of spelter, as nearly as may be ascertained, is given below.

The imports of spelter into England, as taken from Board of Trade returns, totalled in 1913 to 145,004 tons, approximately 14.5 per cent. of the world's production for that year other than domestic, viz., 58,298 tons, approximately 14.5 per cent. of the world's "primary" spelter in the sense of being extracted from ores, the balance of 27,008 tons being the result of treatment of by-products, galvanisers' ashes, hard-spelter, &c. The domestic production, including even as it does so abnormal a proportion of "secondary" metal, amounts to, at the outside, a mere 5.9 per cent. of the world's total annual supply. For the year cited the imports, at the average ruling price for spelter "ex ship," reached a total value of no less than £3,291,772.

THE WORLD'S PRODUCTION OF SPELTER.

Year.	English Tons of 2,240 lb.	Authority.
1845	29,000	Based upon figures as quoted by Ingalls, "Production and Properties of Zinc," New York, 1902, and Liebig, "Zink und Cadmium," expressed to nearest 1,000 tons.
1855	70,000	
1865	98,000	
1875	166,000	
1885	294,000	
1890	342,000	
1895	406,000	
1900	471,460	*Mineral Industry*, vols. XIV.–XXII. These figures include "secondary" spelter produced from old material, galvanisers' ashes, and the like.
1901	508,422	
1902	544,193	
1903	561,547	
1904	612,687	
1905	643,906	
1906	688,321	
1907	725,616	
1908	711,514	
1909	762,559	The United States, in 1913, produced 31.4 per cent. of the world's total.
1910	797,336	
1911	880,411	
1912	955,398	
1913	985,142	

The "Engineering and Mining Journal" of New York, in its issue of April 1, 1916, contains an exhaustive review of the United States spelter statistics for 1915, and it makes extraordinary reading. The author is that well-known writer W. R. Ingalls, and he computes the spelter production of the United States for 1915 at 452,000 English tons, of which probably no less than 55 per cent. was the result of natural gas firing.

He says "the manner in which spelter production in 1915 was expanded is one of the romances of our industry." For 1916 an output of at least 714,000 tons seems assured, much of it, no doubt, from smelteries which exist only for the purpose of reaping the present harvest, but much also from plants of a very permanent description which cannot fail to exercise a potent effect upon the economics of zinc for years to come.

I would earnestly invite the attention of all interested in the metal to this article, in the reading of which it is not amiss to bear in mind that, in addition to being a great producer of zinc ores, the United States, amongst other advantages, enjoys complete immunity from munitions control and excess profits tax.

Prior to 1845 the statistics are not very reliable, and in any case the tonnage was so small as to have little bearing upon the metal in relation to the part it to-day plays in our commerce.

From 1845 to 1900 the periods adopted are quinquennial, and this with the set purpose of eliminating yearly fluctuations and giving a truer mean curve of the productive increase.

From 1900 onwards yearly periods have been plotted.

The curve is a remarkable one, and indicates the ever-increasing relative rate of production, particularly marked

* Ingalls, "Metallurgy of Zinc," 1903, p. 687.

† Based upon figures from "Mineral Industry," Vol. XXII.

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points occurring about 1873 (due to the progress of galvanising), 1900, and 1908. The increase from 1900 to 1913 is truly astounding.

It is by no means easy to arrive at true figures for the yearly production of the world. The complications introduced by primary and secondary spelter, and redistilled hard and other spelters, are not to be neglected. The meticulous accuracy, therefore, implied by stating to the units, or even the odd hundreds, is probably more apparent than real. The tonnages stated have, however, been gathered from the best and most reliable sources available, and enable us to state beyond fear of contradiction that in the relatively short space of sixty-eight years the world's output has increased about 3,400 per cent.!

The market value of spelter has, not unnaturally, fluctuated considerably when viewed over a considerable period of years.

When first produced it realised a high price, which rapidly fell as production increased and no new output for its consumption opened out. In 1807* is was about £40 per ton, rose in 1808 to £84 per ton, and then fell steadily as production overtook demand, until in 1820 it stood at no more than £11.

The extension of sheet-rolling caused the price to rise until in 1825 it reached £30; it fell again as production rose, and between 1830 and 1836 fluctuated between £10 and £19. It again fell to £10 in Breslau (the Silesian centre) in 1848. In 1850 it was quoted at about £16, and from that time onward to 1913 the yearly average fluctuated between £13 19*s.* 11*d.* (the lowest, touched in 1885) and £27 1*s.* 5*d.* in 1906.

The general tendency of later years has been towards a distinctly higher average level. For a very long time low wages, and easily won and treated ores, kept the price low. As wages increased and difficulties of treatment arose the improvements in metallurgical efficiency and extraction kept pace up to a certain point and compensated the producer. Beyond this point there was bound to be a rise in average value, and we see this clearly reflected in the facts that only twice since 1898 has the average yearly price been below £20, and never since the close of 1902.

Industrial conditions had reached such a point that, broadly viewed, a £20 market was unremunerative—distinctly unprofitable in particular for those concerns which did not themselves possess mines.

There is no gainsaying the fact that there is no branch of the metallurgical industry in which, considering the difficulties and risks involved, the invested capital has been so ill-requited as that of zinc. That this is not the popular impression the author is well aware. What profits there have been, however, were made largely by the ore and metal-dealing firms, and those who, in addition to smelting, turned out rolled and stamped zinc together with lead, and silver from complex ores—and possibly also zinc oxide.

Recently a great deal of unfortunate nonsense has been written and woven about the zinc position—obviously by people obviously unqualified to express an opinion of any value—and as this has been widely published, it will be no easy matter to replace it in the public mind with a true perspective of the facts.

We have been informed, for instance, that the superior acumen, industry, and technical knowledge of the Germans enabled them to obtain control of and treat practically the whole of the huge output of Australian zinc concentrates. Obtain control they did, retaining it up to the outbreak of war, but treat the concentrates, except in relatively minor quantities, they did not. They utilised this control to make money, in which they were most successful, passing the major part of the concentrates on to the Belgian works for smelting. Of the total Australian output Belgium smelted at least 75 per cent., and Germany only 14 per cent. They had placed themselves in a position to force this on the Belgian works by acquiring at the outset a controlling interest in a number of them.

What we have now to see to is not so much the hasty establishment of domestic zinc smelting works on an unprecedented scale as the effective dissolution of Teutonic control once and for all. This, coupled with the energetic establishment of the smelting industry on well-thought-out and supported lines is, in the author's opinion, the soundest line of attack for the successful solution of the problem.

Until August 1914, the European spelter market was controlled by an organisation known as the Spelter Convention, which regulated practically the whole of the metal output and price. War, of course, put an end to any question of our supply coming from Germany, and as Belgium fell into the hands of the enemy this source, too, was closed to us. The net result has been to throw the control, so far as the chief allied nations are concerned, into the hands of the United States—where it is likely to remain at least as long as the war lasts.

Germany has abundant spelter; her domestic ores and established smelting industries, to say nothing of those in Belgium, ensure this. Spelter is there to-day quoted at about £28 per ton. The Allies, on the other hand, have abundant ore supplies, and but limited facilities for treatment. We depend, therefore, on the United States for the bulk of our supply, and pay £100.

We are now in the anomalous position that, with the control of the seas and a plethora of the potential source of the zinc in the form of ores, we are driven to oversea countries for the metal at famine prices. Control of the seas, vital as it is, will not bridge the gulf between ore and spelter—and the moral is obvious.

* The prices quoted, 1807 to 1850, are based upon figures as given by Liebig: "Zink und Cadmium," Leipzig, 1913.

LEARNED SOCIETIES AND ENEMY MEMBERS.

IN the "Oxford Magazine" of June 2 appears the following editorial note, and in the succeeding issue the appended letter in reply from Professor W. S. Holdsworth, which will, we think, interest our readers:—

"The Times" last week may have reminded some Oxford readers that, since St. George's Day (April 23), 1914, our University has, for the first time for many years, provided from its professorial body the President of the London Society of Antiquaries, the premier antiquarian society in England, and, we believe, the only society of the kind to which it is a sort of honour to belong and not a mere matter of guineas. Late as it is, we offer our congratulations to the present President, whom we may call without offence our own most distinguished archæologist, Sir Arthur Evans, Professor of Prehistoric Archæology and Fellow of Brasenose College. But while we congratulate we also condole. For the Antiquaries have a habit, not at all unknown in Oxford, of often differing from the distinguished heads whom they choose to rule over them, and such a difference has lately arisen. Despite protests from the President, they are proposing to remove from their books the names of all Germans whom they have at various dates since 1888 elected as honorary Fellows. Such enemy Fellows are, it seems, to remain in suspense till the end of the War, to be then restored if the Society shall then so decide and if (a very large IF) they consent to be then restored. President Sir Arthur Evans protests. He emphasises the "essential inter-dependence of all branches of research. To-morrow we shall once more be labourers together in the same historic field. We should do nothing which may shut the door to mutual intercourse in subjects like our own, which lie apart from the domain of human passions, in the silent avenues of the past." Earlier in the War the Paris Academy expelled von Wilamowitz. Hear his reply: "I reckoned my membership an honour. But how blind are they who do not see that it is a yet greater honour to me to put, on my diploma beneath my name, *ex academia Parisina honoris*

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causa electus." Actually the London Society has only five German honorary Fellows; relations with foreign learning have indeed never been its strong point.

For ourselves we agree with Sir Arthur Evans. We do not find these expulsions of honorary members very dignified, and we are glad to note that, except for one case concerning the Royal Geographical Society the circumstances of which are unique, no society in England, and we believe hardly any foreign society—certainly, as we are assured, no German society—has carried out any such expulsion. It may, of course, be that the London Antiquaries are not expelling but suspending their honorary Fellows, but the practical difference between the two steps is trifling. Suspended Fellows will not be very anxious to resume membership after the War; if rational feeling is anything like what it appears to be, the Society is not very likely even to wish to revive them. It seems a pity that, with so very few honorary Fellows involved, the authorities of the Antiquaries could not leave a thorny matter alone. It might be said, it seems to us, that the War itself has suspended legal relations between a British society and its German members, and that, as these relations are actually and legally at an end, nothing is gained by formally suspending them. It may be said also that no number of expulsions or suspensions of German honorary members will help in the least to win the War, and that those who suppose that, by expelling, they are doing something patriotic, are clearly in error. They merely sharpen here the war-hatreds for which they have so much blamed the Germans. They confuse the combatant and the non-combatant, and add thereby to those horrors of war which Germany has done so much to accentuate in the past few months.

Dear Sir,—I am writing to protest firstly against your statement that no society in England has removed its German members, and secondly, against your views as to the inexpediency of such a step.

Firstly, I know of one society which has taken this step, namely, the Society of Public Teachers of Law.

Secondly, I think that the policy of removing German members of British societies and of the societies belonging to the countries of the allied nations is justifiable, because it is based upon long-sighted views as to the steps which citizens of the allied nations ought to take to diminish the risks of future wars; and, if there must be wars, the risks of the wholesale breaches of the laws of war, of which our opponents have been guilty. If our opponents had observed these rules in the course of this War, it might have been possible to contend that we should, at the end of it, overlook its origin and forget the past. But they have shown, from the manner in which they have conducted it, that they are not fitted to be members of the society of civilised nations. It is not until they have ceased to hold the set of ideas which have made both this War and the manner in which they have waged it possible, that the peace of the world will be in any degree assured. We shall not produce this change in their ideas by conquering them—that will only prove to them that they have been beaten, and, not improbably, produce a desire for revenge at the next favourable opportunity, for which they will prepare with all that apparatus of spying and economic penetration with which we are now too familiar. We can only produce this change in their ideas by a process of ostracism, carried out rigidly for many years. Each individual and each society of the allied nations must do its best to prove to each individual and each society of the German nation that they have forfeited their right to claim anything in the nature of social intercourse. No doubt this will be hard on individuals; but, as in the social world, individuals must be judged by, and suffer with, their associates. The absence of any sanction for the breach of the rules of International Law, which this War has so strikingly illustrated, has proved that International Law is in many respects analogous not to a system of law, but to a system of manners; and we know that the only safeguard for the preservation of a high standard of manners is social ostracism. Let us cease vainly to deplore the absence of a sanction for the rules of International Law—let us rather brace ourselves to apply the only remedy open to us, at whatever cost. I am aware the cost is not light. It may entail intellectual, social, and economic loss. But I contend that if, as I think it will, it renders less probable the tragedy which we are now experiencing, it will be worth the cost. The policy of the easy condonation of the breaches of those International Laws upon which the relations of all civilised nations rest, advocated in your note, is the surest method of procuring a repetition of this tragedy at a future date.—Yours, &c.,

W. S. HOLDSWORTH.

St. John's College, Oxford: June 4, 1916.

[We believe that a sound beating and a good example teach a boy manners more effectively than sending him to Coventry. The cause of International Law will most certainly not be advanced by the perpetuation of international hatred. But to suggest that our note advocated a policy of easy condonation of breaches of International Law is an entirely unjustifiable mis-statement.—ED. "The Oxford Magazine."]

[There can be little doubt that the German savants will desire, after the war, to resume the policy of "peaceful penetration" which has so materially assisted their country in the past, and the success of which has been a main factor in the development of the swelled head from which the whole German nation is suffering, and which, at bottom, has been the ultimate and dominant cause for the present catastrophe. No wonder the Germans think us fools, and that they alone have the wisdom that is needed to rule the world. The surest way to peace is to force the conviction on the Teutonic mind that the rest of the world is as good as Germany, and is perfectly capable of doing without her in any branch of learning as well as in trade and manufacture.—ED.]

ART IN LONDON.

ITALIAN ARTISTS AND THE WAR.

THE organiser of this exhibition of Italian war pictures and cartoons at the Leicester Galleries, M. Vermesch, is a Belgian citizen, desirous doubtless of showing by some means his gratitude and goodwill towards one of the Allied Powers of the Entente. And he may be fairly congratulated upon the results of his efforts. For the merits of the exhibition are conspicuous; and if a difference of opinion exists as to whether or not certain works are lacking in the qualities of art, of caricature, of other desirable attributes—well! we must allow for such differences.

For what, after all, is caricature at its best, such as we find it produced by the Anglo-Saxon races? It is, in brief, the touching of the point of a jest with a needle, not with a hammer. Caricature must be neither coarse nor exaggerated and should appeal by suggestion rather than by punctuation.

Regarded in this light, what can we think of Signor E. Sachetti's art? Some may vaunt it as fine and almost unapproachable; *bene!* Let us concede that it is unapproachably inartistic and the very caricature of caricature, so far as the chief foe is concerned. An exception in this respect may be noted in No. 60, where the Boche is quite admissible. Nor do we appreciate the work of Grande at any higher rate, nor do we think Signor Tofano's sketches as otherwise than poor.

But here we leave the rôle of adverse critic—an unthankful part, under any circumstances. For though we cannot give the cachet of our approval to all beside, we have now to advert to work which is highly meritorious at the best or which is good, if to a lesser degree. An effective series of six colour sketches will hold a special appeal to the English—namely, those by T. Corbella dealing with the pathetic tragedy of Edith Cavell; it is surely high praise to be able to say that there is very little which is stagey in these sketches, whilst at the same

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time our emotions answer to the appeal issued by the artist. He has also a very clever, lurid drawing, "Germany and the Mirror of Blood."

Signor G. Porcini is a portraitist who produces good likenesses, but whose technique gives the unfortunate effect observable when glazed tilework has "crazed." Umberto Tirelli has a series of royal portrait-caricatures, which are delightful. Golia's work is of mixed value, the best being really good, such as "A Poster Design" (25), "Verdun," "La Signorina Francia," "The Famous Organist," and "Dreams." Compare the last-named with Carlin's "William's Dream," which possesses none of the dramatic interest of Golia's treatment, but which is all the same a very decorative colour-piece and a good composition. But why Carlin and some others should miscaricature any of Italy's Allies is a mystery, though we are bound to designate No. 22 as such, whereas he treats his own countryman, General Cadorna, more fittingly. Carlin's "To the Slaughter-house" is admirable in every respect.

Signor A. Martini's "Danza Macabra" is noticeable for its delicacy of colouring and its technique, but it is worthy of better design in some of the series. What a contrast, again, is this work to other contributions by the same artist—works quite Poësque in effect!

There is much else deserving of notice, but we must confine ourselves to two more artists—namely, Galantara (Ratu Lunga) and Pogliaghi. The former contributes forty-four and the latter twenty-six sketches; but quantity without quality would count for nothing. Gabriele Galantara is in effect the Italian Raemaeker; we in England have no cartoonist (except it be Will Dyson) who approaches these of Italy and Holland for dramatisation of the uglier side of war by means of acceptable cartoons. No. 129, "A Meeting," is one of the best, and "The Prop" (135) is perhaps the least admirable. The denizens of happy England cannot well realise the dangers and difficulties of the Italian campaign against Austria; it needs either an intimate knowledge of the Alps or (as a most capable substitute) such a fine series of studies to give us a grasp of the elements of what such a campaign connotes; for more than the elements, even these fine drawings cannot deal with.

It is a fine exhibition, and Messrs. Brown & Phillips will have their galleries well patronised during the next few weeks.

POSTER DESIGNS BY MR. F. G. BROWN, R.B.A.

IF at times the flesh has weakened and the spirit has quailed before the magnitude of some one or other exhibition, such could obviously not be the case here, where but fifteen poster designs confront our attention.

They are not all posters, even then, however, these designs by Mr. Gregory Brown, at any rate, are not so in the most limited acceptation of the term. But more broadly understood, all may be entered under such a category. It may be readily conceived that breadth of treatment and "grip" of colour will be the two outstanding qualities of such work, and Mr. Brown may be fairly congratulated upon his sympathetic realisation of these requirements. And on the occasion of our visit to his studio, 19 Fitzroy Street, he also showed us other works of his, where the same quality of breadth is in evidence, one example, indeed, lending itself to reproduction for mosaic decoration.

Decoration is, at last, the motif underlying Mr. Brown's work; but, no matter what argument may be advanced as to decorative perception, limitation of colours, or artistic licence, we cannot now, or at any time, approve green and mauve skies, as in Nos. 1, 2, 8, 12, and 15. In other respects No. 15 ("Richmond") and No. 12 ("Hampton Court") are interesting developments, and possess arrestive qualities. The best works, however, are No. 7 ("Hadley Woods") and No. 9 ("Uxbridge"). The colours, unfortunately, lose something of their original effect in reproduction, as we have had occasion to notice on previous occasions; but, even so, the result obtained is good.

R.I.B.A. EXAMINATIONS.

THE FINAL: ALTERNATIVE PROBLEMS IN DESIGN.

Instructions to Candidates.

1. The drawings, which should preferably be on uniform sheets of paper of not less than Imperial size, must be sent to the Secretary of the Board of Architectural Education, Royal Institute of British Architects, 9 Conduit Street, W., on or before the dates specified below.

2. Each set of drawings must be signed by the author, and his full name and address, and the name of the school, if any, in which the drawings have been prepared, must be attached thereto.

3. All designs, whether done in a school or not, must be accompanied by a declaration from the student that the design is his own work and that the drawings have been wholly executed by him. In the preparation of the design the student may profit by advice.

4. Drawings for subjects (*a*) are to have shadows projected at an angle of 45° in line, monochrome, or colour. Drawings in subjects (*b*) are to be finished as working drawings. Lettering on all drawings must be of a clear, scholarly, and unaffected character.

Subject XXVIII.

(*a*) *The Hall and Staircase to a National Museum.* The Hall to be 38 feet wide. The inner swing doors and screen to be shown, but not the outer part of the entrance. The height of the main storey to be 20 feet from floor to floor. Four steps in the Hall to lead up to the main floor level.

Doorways to galleries on either side and access to galleries at back of staircase required. Top light to the staircase. Openings on first floor looking into the hall or stair or both if desired.

Drawings.—Two plans and two sections to $\frac{1}{8}$-inch scale and details to $\frac{1}{2}$-inch scale.

(*b*) *A Small Country House to Cost* £1,500. To stand in ground 200 feet frontage on the south-west of a country road and 300 feet deep. The view is to the south and the ground slopes 1 in 25 to the south-west.

Accommodation required.—Dining-room, good drawing-room, loggia or verandah, kitchen, small housemaid's pantry, &c.; four bedrooms, bathroom, three w.c.'s.

Drawings.—Two plans and roof plan, section and elevation to $\frac{1}{8}$-inch scale required. Block plan of the whole site, scale 32 feet to an inch.

The student is to cube out the building, showing how he arrived at the cubes, and to price it.

Subject XXIX.

(*a*) *A Mausoleum* to the memory of a shipowner and his family.

To be placed on a plot of ground 24 feet by 20 feet and to be simple in treatment and to cost about £1,000. Wall spaces for inscriptions. Vault not to be shown.

Drawings.—Plans, full section and one or two elevations to $\frac{1}{2}$-inch scale and detail of some part to a larger scale.

(*b*) *A Chapel to a Two-Storeyed Suburban Infirmary.* To hold 150 patients and staff altogether. Entrance from the main corridor of the building on both floors.

Drawings.—Two plans, section and two elevations required to $\frac{1}{8}$-inch scale, and details to $\frac{1}{2}$-inch scale.

Subject XXX.

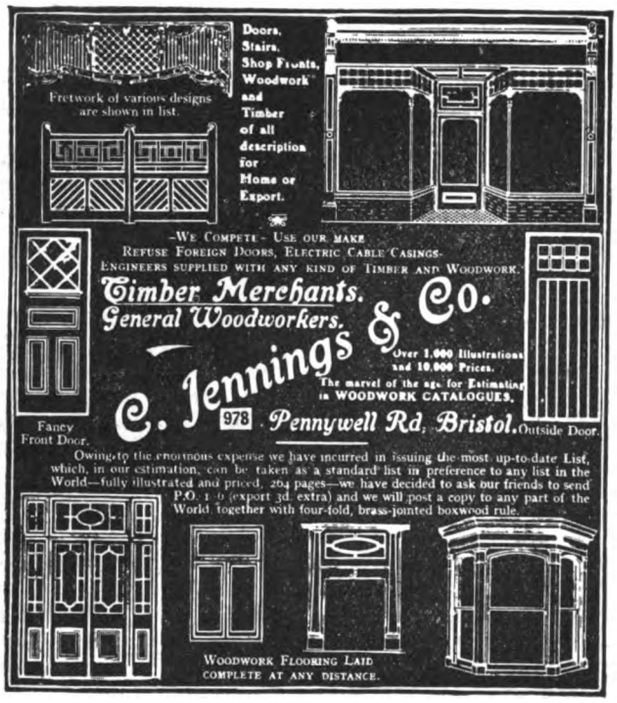
(*a*) *A Pavilion and Ornamental Pool, &c.*, at the end of a lake in a park. The total space to be dealt with to be about 300 feet square and 4 feet above the surface of the lake.

Drawings.—General plan to $\frac{1}{16}$-inch scale, elevation and details to a suitable scale to explain scheme.

(*b*) *A Timber and Lead Lantern on the Roof of a Hall* 40 feet wide, the ridge of the roof of which is 40 feet from the ground. The lantern to be about 11 feet wide.

Drawings.—Plans at various levels and the necessary sections and elevations to $\frac{1}{2}$-inch scale. All construction to be shown, including the trusses to carry the lantern. Any details to a larger scale that may be desirable.

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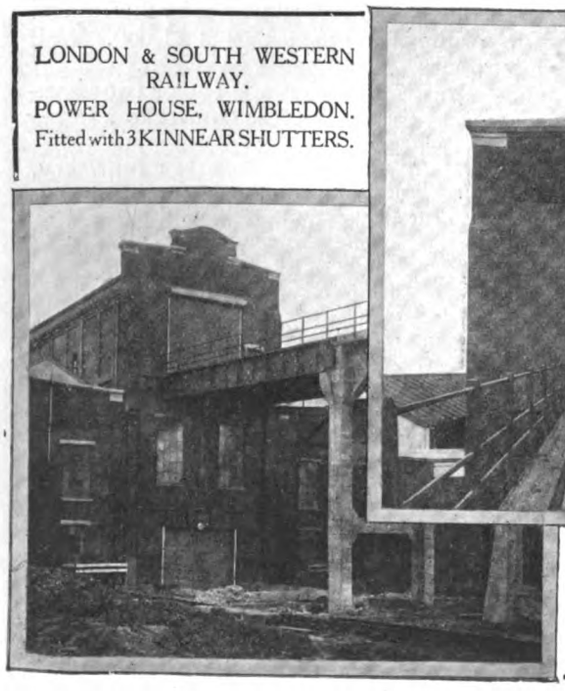
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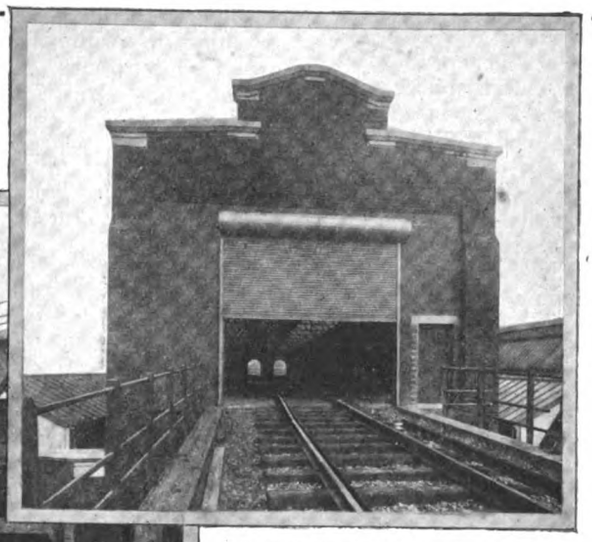
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Dates for Submission of Designs in 1916-1917.

	Subject XXVIII.	Subject XXIX.	Subject XXX.
United Kingdom ..	31st Aug.	31st Oct.	30th Dec.
Johannesburg ..	31st Oct.	30th Dec.	28th Feb.
Melbourne.. ..	30th Nov.	31st Jan.	31st Mar.
Sydney	30th Nov.	31st Jan.	31st Mar.
Toronto	30th Sept.	30th Nov.	31st Jan.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

The Housing Question in the East End.

SIR,—The night and day bedrooms in the East End which night and day workers shared have been described with more or less fanciful embellishments in lay journals. They are a thing of the past to-day. So also is the competition to secure "the key" in newly-erected buildings. The male population in the alien world in this part has dwindled down appreciably during the last year of the war, and their families have in many instances returned to their native countries. But all the same the demand for rooms is larger than the supply. Sub-contracting is the essence of business in the alien world, and a large quantity of Government work in the clothing and outfitting lines finds its way here. This work must not be done in the living-rooms of the people, and the factory workrooms are not spacious enough to accommodate all the workers; so rooms are hired, small or large, providing the light is good, and three or four more workers, according to the size of the rooms, are installed in them with their machines, and the demand for these rooms keeps the housing problem very much in its normal condition. Sub-letting by tenants is forbidden by owners except in cases where the lodger is a member of the family. This condition has not always been observed, and imaginary claims as to relationship have often been put forward. In-going tenants to-day are forbidden to sub-let any part of their rooms to anyone now. The question of children does not come into the matter here as it does elsewhere. It is hard to find one of these families without children. The alien is a good tenant in many ways. The collector finds no difficulty on rent days, and he is law-abiding, but his ideas of sanitation are very crude, and the sanitary and health inspectors keep a watchful eye on the residents in the flats situated in the side streets converging off the Whitechapel Road.—Yours, &c., D. G. R.

Aberdeen versus Foreign Granite.

SIR,—Permit me to state that the note on the present difficulties of the Aberdeen granite trade contained in your issue of June 23 gives an altogether misleading account of the position of affairs.

The local quarrying industry has not been ruined by the importation of foreign material, but by the falling off in the building trade. The Aberdeen quarries yield only a small quantity of stone that is fit for polishing, as against a very large quantity that has to be employed for building; and if the outlet for the latter quality be blocked, the working of the quarry has to be suspended.

No assistance will be given to the local quarries by the continued prohibition of the import of foreign granite, one result of which will be the ruin of a yet larger number of granite manufacturers, several of whom have already had to close down since the war began; and another, the killing of an important branch of the export trade which Aberdeen at present enjoys.

But for the importation of the foreign granites, to which you so much object, the great bulk of the granite trade would long since have left Aberdeen, the product of the local quarries being utterly unable to compete with the foreign article.

But it is not in the matter of price that foreign granites are preferred to the native, for the former commands two or three times as high a price as the latter. It is in the beauty and variety of foreign granites and in their freedom from the defects and blemishes which are so frequently found in our home granites, that the foreigner has succeeded in capturing so large a proportion of trade.

It is curious that a Journal of the position of "The Architect" should so obstinately refuse to acknowledge well-known facts in the endeavour to bolster up a certain phase of political opinion.

Allow me to add that I have no interest in any foreign granites, their quarries, or their production.—Yours, &c., MERCHANT.

BUILDING PROGRESS IN THE PROVINCES AND SUBURBS.

A LIST OF WORKS PROJECTED OR COMMENCED.

(N.B.—Local Authorities, architects, and others are invited to submit full particulars for insertion in this weekly list. Where districts are not entered against names of architects and builders the address is as a rule local.)

ENGLAND.

BERKSHIRE.

Yattendon.—"Shockendon": additions for Mr. C. Saunders.

BUCKINGHAMSHIRE.

Amersham.—"St. Cloud": alterations. Mr. J. P. Briggs, F.R.I.B.A., architect, 1 Arundel Street, Strand, London.

Bourne End.—Property. Messrs. Moscrop-Young & Glanfield, F.R.I.B.A., architects, 72 Oxford Street, London, W.

Flackwell Heath.—Property: additions, &c. Mr. Coleman, builder.

Great Missenden.—Farmhouse, Ballanger: alterations. Messrs. Swannell & Sly, architects, High Street, Rickmansworth (also at Amersham).

Loosley Row.—Cottage: alterations. Mr. A. W. Nash (of High Wycombe), architect.

Prestwood.—Bungalow for Mr. E. W. Drain.

DEVON.

Chapelton.—U.M. Church.

DORSET.

Newton.—Two cottages. Mr. Burt, builder, Railway Depôt, Swanage.

Swanage.—"Rutland Cottage," Victoria Avenue: additions for Mr. Date.

DURHAM.

Grange Villa.—Picture Hall: alterations for Mr. C. Buckton.

Hebburn.—Premises, corner of Hood and Lamport Streets: alteration for Messrs. Hawthorn, Leslie & Co., Ltd.

Stanley.—Business premises, Front Street: additions and alterations for Mr. A. Hutchinson.

HAMPSHIRE.

Aldershot.—Old school, North Town: conversion into house for Mr. J. Field.

Proposed stables, &c., Redan Hill, for Messrs. R. Bate & Sons.

Works: extension for Aldershot Gas and Water Company.

LANCASHIRE.

Castleton.—Works: additions for Messrs. Whipp & Bourne.

Manchester.—Baptist College, Brighton Grove: proposed extensions.

Rochdale.—Buckley Mills: additions for Messrs. J. Schofield & Sons.

Spring Works: additions for Messrs. Brierly & Kershaw.

LEICESTERSHIRE.

Ibstock.—Business premises: additions and alterations for the Coalville Co-operative Society.

NORTHAMPTONSHIRE.

Peterborough.—Two houses, Garton Road. Mr. R. S. Jellings, builder, Taverners Road.

Walton.—The "Paul Pry" p.h.: stables for Messrs. Pupps & Co.

NOTTINGHAMSHIRE.

Mansfield.—House, Ashfield Avenue: additions for Mr. C. H. Hill.

House, Carter Lane, for Mr. W. Draper.

SUFFOLK.

Lowestoft.—Recreation room, Commercial Road, for R.N.R.

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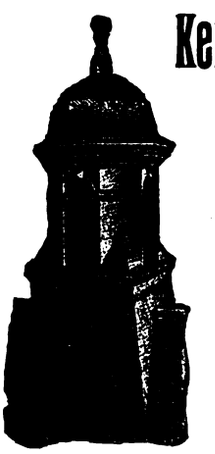
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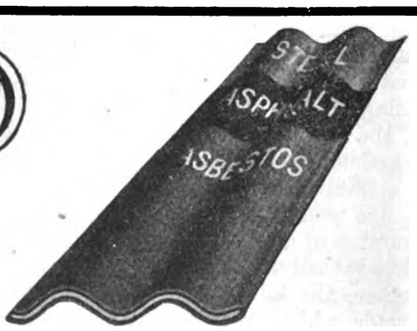
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THE
Architect and Contract Reporter.
FRIDAY, JANUARY 7, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

****** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.***

CONTRACTS OPEN.

IRELAND.—Jan. 13.—For erection of dwellings and the execution of other works on the Ormond Market area, for the Dublin Corporation. Deposit £2. The City Architect, Municipal Buildings, Cork Hill, Dublin.

IRLAM (LANCS).—Jan. 24.—For the building of seventy-eight houses on three sites, as follows: thirty-two houses on site No. 1; twenty-eight on site No. 2; and eighteen on site No. 3, for the Irlam Urban District Council. The contractor may quote for the whole of the houses or any one or more of the sites. Deposit £5. Mr. R. H. Winterbottom, surveyor, Council Offices, Irlam.

KENT'S BANK.—For the various works required in converting Abbot Hall into a Holiday Home to accommodate sixty visitors and the staff. Mr. M. G. Shaw, Licentiate R.I.B.A., 45 Highgate, Kendal.

LONDON.—Jan. 10.—For construction of ferro-concrete coal-storage bunker, lift well, and retaining wall at the power house, for the St. Pancras Borough Council. Contractors to submit their design of reinforced concrete to comply with the requirements of the London Building Act and of the London County Council. Deposit £1. Mr. C. H. F. Barrett, town clerk, Town Hall, Pancras Road, N.W.

LONDON.—Jan. 10.—For steel-constructional work in extension of power-house, for the St. Pancras Borough Council. Deposit £1. Apply to 57 Pratt Street, Camden Town, N.W.

LONDON.—Jan. 12.—The Metropolitan Asylums Board invite separate tenders for forming operating room at the South-Western Fever Hospital, Landor Road, Stockwell, S.W. Deposit £1. Mr. W. T. Hatch, M.I.C.E., M.I.M.E., engineer-in-chief, the office of the Board, Embankment, London, E.C.

ROMSEY.—Jan. 19.—For pulling down some existing buildings and for erection of three cottages on the site, for the Corporation. The Borough Surveyor, Market Place, Romsey.

ROTHERHAM.—Jan. 10.—For foundation work for turbine machinery at the Electricity Works, Rawmarsh Road, for the Corporation. The Engineer's Office, Rawmarsh Road, Rotherham.

SCOTLAND.—Building contractors prepared to tender for a minimum of twenty-five houses (all trades) in connection with the second lot of 300 houses at the Rosyth Naval Base are invited to send their names to the Scottish National Housing Company, Ltd., 111 George Street, Edinburgh.

SCOTLAND.—Jan. 15. For mason, slater, and cement works of additions and alterations of farm steading at Upper Boat, Inverurie. Messrs. J. F. Shand & Son, carpenters, Strichen.

TENDERS.

LETCHWORTH.

For the erection of blocks of houses in connection with the Letchworth housing scheme, for the Hitchin Rural District Council.

Accepted tenders.

JEFFS BROS., Blocks 1 to 5	£4,850	0	0
G. W. SOUSTER & SON, Blocks 6 to 11	7,329	0	0
J. KNOX, Blocks 12 to 14	4,290	0	0
SOUSTER & SON, Blocks 15 to 17	3,047	0	0

SCOTLAND.

For extensions at the electricity works, for the Ayr Town Council.

Accepted tenders.

D. & J. Milligan, masons, &c.	£667	2	1
W. Miller, plasterer	228	7	0
D. & J. Milligan, joiners	91	0	0
W. Auld & Sons, plumbers	31	0	0

SOUTHAMPTON.

For proposed additional dining-room accommodation at 98 Above Bar Street, Southampton. Mr. WILLIAM BURROUGH HILL, architect, Southampton.

Nash	£1,344	0	0
Cawte	1,178	0	0
Stevens & Co.	1,163	0	0
JENKINS & SONS, Southampton (*provisionally accepted*)	1,126	0	0

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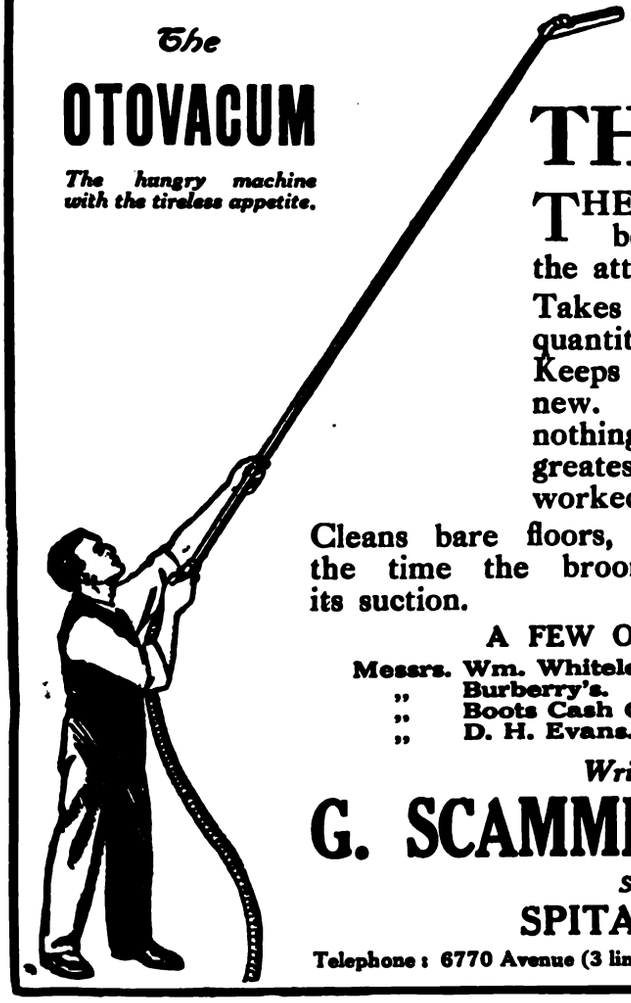

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THE ORIGIN OF ENGLISH MEASURES OF LENGTH.

IN the latest issue of the "Journal of the Royal Society of Arts" there appears an interesting article under the above title from the pen of Colonel Sir Charles M. Watson, K.C.M.G., C.B., R.E. From it we take the following extracts:

The modern measures of the civilised world are, with few exceptions, based on the ancient units, of which they may be regarded as the direct descendants. Of these exceptions the most important are the measures of the metric system, which were designed with the object of breaking away from the records of the past by the adoption of a new geographical mile, equal to $\frac{54}{100}$ of the true geographical mile.

The English measures of length are a good example of the modern representatives of the old units, and are worthy of study from this point of view. How the measures originally came to England it is not easy to say, but there can be no doubt that they were in use before the Roman invasion, having possibly been introduced by Phœnician traders, and were afterwards modified by the Romans, the Saxons, the Scandinavians, and the Normans, each of whom had measures, based on the old units, but altered in course of time. It was not until the thirteenth century that they were moulded by law into one uniform system.

The English scale, as authorised by statute, may be summarised as follows:—

		1 inch.
12 inches	=	1 foot.
3 feet	=	1 yard.
5½ yards	=	1 rod, pole, or perch.
4 perches	=	1 chain.
10 chains	=	1 furlong.
8 furlongs	=	1 English statute mile.

Of these units the inch is derived from the Roman system, being one-twelfth of the foot, but the foot, on the other hand, is equal approximately to the Greek foot, while the yard, which is simply a double cubit, comes from the Babylonian system, being approximately a double geographical cubit. The perch is the English representative of the Babylonian gar, and the furlong occupies a similar place to the stadium, while the mile is composed of eight stadia, apparently in imitation of the division of the Roman mile. For use at sea, however, the geographical mile, divided into ten stadia, or, as we call them, cable lengths, has been retained, as no other mile can be used for purposes of navigation.

In order fully to understand the connection between the English measures and the ancient measures of length, it is necessary to write the scale in a somewhat different manner, and to introduce some other units which are no longer used. The revised scale is as follows:—

		1 barleycorn.
3 barleycorns	=	1 inch.
3 inches	=	1 palm
4 palms	=	1 foot.
6 ,,	=	1 cubit.
12 ,,	=	1 double cubit or yard.
11 cubits	=	1 perch.
405 ,,	=	1 cable's length.
4 perches	=	1 acre's breadth or chain.
10 chains	=	1 acre's length or furlong.
8 furlongs	=	1 English mile.
10 cables	=	1 geographical, or sea mile.

The English inch is equal in length to 3 barleycorns set end to end, or to the width of 8 barleycorns, set side by side. The barleycorn, as a measure, is forgotten, but the inch on carpenters' rules is still divided into eight parts, while, on a shoemaker's tape, the sizes of boots and shoes increase by a barleycorn, or ⅓ inch, for every size. For example: size No. 8 of a man's boot measures 11 inches; size No. 9, 11⅓ inches; size No. 10, 11⅔ inches, and so on. One would have thought that the sizes would increase by one quarter of an inch at a time, but the barleycorn has held its place to the present day.

The palm, which was originally composed of four digits or finger breadths, and, since the time of the Romans, of three inches or thumb breadths, is no longer used in England, and its place has to a certain extent been taken by a measure called the hand, composed of four inches and employed in measuring the height of horses. The change may have been due to the fact that the number four was more convenient for division than three, and that when the digit gave way to the inch the palm of four digits was replaced by the hand of four inches.

Prior to the thirteenth century the length of the foot in England was uncertain, and there appear to have been several measures in use, varying from the Roman foot of 11.66 English inches to the Belgic foot of 13.12 English inches; but, by the Ordinance known as the Statute for Measuring Land, enacted in the reign of King Henry III., the relations of the inch, the foot, and the cubit to one another were definitely fixed, and have never since been altered. The cubit of this statute is the double cubit, afterwards called the yard. A translation of the Latin words of the statute, describing the different measures, is as follows:—

"It is ordained that 3 grains of barley, dry and round, make an inch; 12 inches make a foot; 3 feet make a cubit; 5½ cubits make a perch; 40 perches in length and 4 perches in breadth make an acre.

"And it is to be remembered that the iron cubit of our Lord the King contains 3 feet and no more; and the foot must contain 12 inches, measured by the correct measure of this kind of cubit; that is to say, one thirty-sixth part of the said cubit makes one inch, neither more nor less. And 5½ cubits, or 16½ feet, make one perch, in accordance with the above-described iron cubit of our Lord the King."

It is interesting that, in this statute, the double cubit, thus accurately described, should have been called the cubit of the King, just as the longer cubits of Babylon and of Egypt were called Royal cubits to distinguish them from the shorter cubits of those countries. In the Latin original of the Ordinance the word used is "ulna," the usual word for cubit. The word "yard," to signify the English double cubit, occurs for the first time in the laws of England in a statute of 1483, which is written in French.

The perch, equal to 11 single or 5½ double cubits, is a very ancient measure, but I cannot find at what period it was first used in England. It was employed principally in connection with the measurement of land.

The two measures, the acre's breadth, afterwards called the chain, and the acre's length or furlong, have also been used from a very early period. The former is equal to 44 single cubits, 22 yards, or 66 English feet, while the latter is exactly ten times this, 440 cubits, 220 yards, or 660 feet. The furlong is the modern representative in our system of the ancient stadium, which had a length of 600 Greek feet, or 607.5 English feet, but the reason for its being longer than the stadium has, so far as I know, not been satisfactorily explained. But the change may have been due to the fact that other measures of distance were in use in England prior to the present statute mile, which varied in different parts of the country, and the mean of these was approximately equal to the Gallic league of 12 stadia or 7,290 English feet. One-eleventh of this, 663 English feet, is approximately equal to the English furlong, and eight of these measures, following the Roman system, were combined to form the English statute mile.

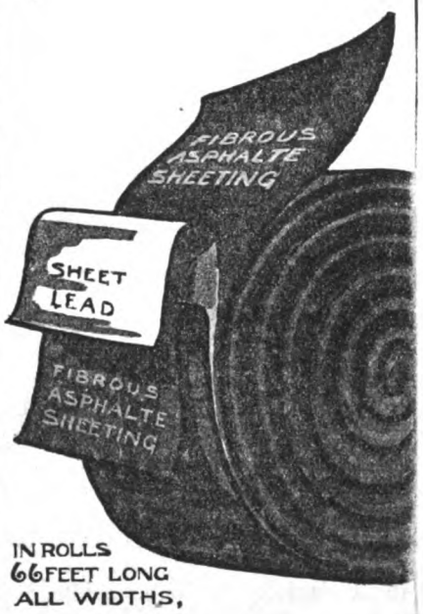
But whether this is the origin or not there appears little doubt that the mile, furlong, and chain, or acre's breadth, were in use in England in Anglo-Saxon times, as there is a law of King Athelstane, who reigned A.D. 925-940, in which it is enacted:—

"Thus far shall be the King's grith from his burgh gate where he is dwelling, on its four sides; that is three miles, and three furlongs, and three acre's breadths, and nine feet, and nine palms, and nine barleycorns."

The length of the measure called the King's grith, or King's peace, was the distance from his house within which peace was to be maintained, and it is evident that in this law an attempt was made to express the distance

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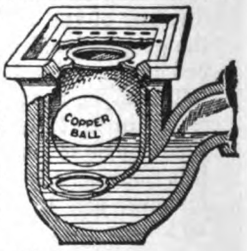
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in terms of ordinary measures. Converting these terms into feet we have:—

3 miles	=	3	×	5,280 feet	=	15,840 feet.
3 furlongs	=	3	×	660 ,,	=	1,980 ,,
3 acres' breadth	=	3	×	66 ,,	=	198 ,,
9 feet	=			9 ,,	=	9 ,,
9 palms	=			2¼ ,,	=	2¼ ,,
9 barleycorns	=			¼ foot	=	¼ foot.
				Total	=	18,029½ feet.

$18,029\frac{1}{2} = 601 \times 30$ very nearly, so that it would appear that the length of the King's grith was 30 stadia, the same measure as that known in the East as the parasang, and in Egypt as the schoenos. It is remarkable that this measure should thus appear to have found its way to England, and there be regarded as a Royal measure.

There was another measure of distance used in England, known as the leuga, composed of 12 furlongs, which corresponded to the Gallic league of 12 stadia already described. In the Chronicles of Battle Abbey, which extend over the period A.D. 1066-1176, in the account of the lands belonging to the abbey, the following statement occurs: "The English leuga contains 12 roods (furlongs), and 40 perches make one rood; the perch is 16 feet in length; the acre is 40 perches in length and 4 in breadth; but if it is 20 perches in length, it shall be 8 in breadth." The acre's length, here called rood, and the acre's breadth appear to have been the same as in the time of King Athelstane, and the foot is the Saxon foot, equal to 12.375 of our present inches. The measurement of the acre, 4×40 perches, is the same as that given in the Statute for Measuring Land enacted in the reign of King Henry III., which has already been referred to.

The terms acre's length and rood are no longer used, and this measure is now known as the furlong, while the acre's breadth has been called the chain since the beginning of the seventeenth century, when it was divided into 100 links instead of 66 feet. The chain, which was the invention of Professor Gunter, has proved very convenient for the measurement of land acres, and is now always used.

Since the introduction of the chain, the perch or rod has been less employed in connection with land measures, but is still used by builders for the measurement of brickwork. The common English stock brick is half a cubit in length, one quarter of a cubit in width, and one-sixth of a cubit in thickness, or rather less than these dimensions, to allow for the thickness of the mortar joints, while a rod of brickwork, which is the unit for builders' work, is a mass of brickwork, one rod or 22 bricks in length, one rod or 66 bricks in height, and three bricks in thickness. The perch or rod of brickwork contains 4,356 bricks.

The English sea mile is exactly the same as the geographical mile of the Babylonian system, and its tenth part, the cable length, is identical with the stadium. In these measures there has been no change, and the only difference is that the cable length is 405 English cubits, whereas the stadium was 400 original cubits. This is due to the fact that the English cubit is a little shorter than the latter in consequence of the English foot, as fixed by law, being rather less than $\frac{1}{6000}$ part of the geographical mile.

It will be seen from the above *résume* that our English measures of length are no haphazard modern invention, as some people imagine, but have come down to us from prehistoric times. They have proved most convenient for the different uses to which they are applied, and it is to be hoped that they will never be abandoned in favour of the metric measures, notwithstanding the pertinacity with which the advocates of the latter press their views on the public. Such a change would do England no good, but would considerably assist foreign manufacturers; and there can be little doubt that the agitation in favour of the metric system has been pushed by German agents in this country, as they are fully aware that it would be for the advantage of German trade and assist in that capture of the world's commerce for which Germany has been working for many years. Possibly one effect of the present war may be to put an end to the attempt to abolish our English measures in order to compel Englishmen, against their will, to adopt those of the metric system.

BRITISH FIRE PREVENTION COMMITTEE.

THE following are some particulars of the War emergency work conducted by the British Fire Prevention Committee:—

FIRE WARNINGS.—The Committee's warnings service embraced the preparation and free issue of a large number of public "fire warnings" in connection with the War emergency disseminated by the Committee in the form of posters, circular letters or as notices. The special classes of risk under review for which special notices were issued included hospitals, convalescent homes, refugee hostels, schools, billets, factories, and farms, for each of which a separate form of "warning" was prepared, whilst air craft hazards were dealt with on general lines. The total issue of posters, &c., exceeds 250,000, and free issues are still obtainable upon written application (with large stamped envelope enclosed) if addressed to the Registrar of the Committee, 8 Waterloo Place, London, S.W.

FIRE SURVEY FORCE.—At the outbreak of the War the Committee formed a special fire survey force of 100 surveyors to undertake at short notice any fire surveys required by the Government in an honorary capacity. Many establishments taken over for the War emergency were surveyed by this force, including numerous hospitals.

GENERALLY.—The whole of the complex technical work arising out of the above services has been carried out gratuitously by a sub-committee, loyally assisted by the clerical staff of the British Fire Prevention Committee, and in its operations the Committee invariably kept in close touch with the public departments concerned.

RESULTS ACHIEVED.—The results of the work have been far-reaching. The greater care taken by the public to prevent outbreaks of fire by sensible and inexpensive precautionary measures has been most marked, as also the effort to meet fires with organised self-help and simple hand fire appliances. A material reduction of the annual fire loss during the War has been achieved. The loss of life from fire has been reduced, and large quantities of produce and goods important to the conduct of the War have been thereby preserved.

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MESSRS. MATHER & PLATT, LTD., electrical, gas, hydraulic, textile, and fire engineers, of Park Works, Manchester, report satisfactory business in all their branches during the past year. The output of the electrical department is far ahead of the previous record, and, with the exception of a certain amount of plant for shipment, practically the whole of the work turned out has been for war service contracts for a variety of purposes. The firm have perfected the large two-cycle double-acting high-speed vertical gas engine. When trade again becomes normal they will manufacture these engines in large units of from 500 b.h.p. upwards.

The important installation of Mather & Platt's patent mechanical filters for Oldham Corporation Waterworks has been completed, and a further extension at Sheffield of a battery of six filters, making a total for the Sheffield Corporation of sixty-one filters. Filters have been installed at two large camps and at several munition factories. For the city of Tiamen, in Japan, an installation comprising fourteen Queen type mechanical filters, each 12 feet in diameter, having a total capacity of 4,000,000 gallons per day, has been completed, also numerous other installations both at home and abroad.

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During the past year Messrs. Mather & Platt, Ltd., have supplied turbine and centrifugal pumps for an ever widening sphere of application. A new line is the "medium lift" for capacities from 200 gallons up to 25,000 gallons per minute, and for heads of from 75 to 175 feet. In addition they also have a new low lift line of pumps for handling large quantities of water at low heads, specially designed for circulating water purposes.

In the standard cast-iron tank department Mather & Platt have supplied the largest structure yet undertaken by any firm. This was a tank having a capacity of 200,000 gallons for the Consett and Weardale Water Co., Durham. The base covers an area of 5,400 square feet, and the dimensions are 100 feet by 54 feet by 6 feet 6 inches deep. The tank was filled within four months of the receipt of the order.

Their textile department continues to maintain a foremost place in the supply of all classes of bleaching, printing, dyeing, and finishing machinery.

In the fire department a number of important installations of the "Grinnell" auto-sprinkler and fire alarm have been carried out, and the well-known chemical hand extincteur, the "Simplex," is being very widely adopted.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 13,118. Dec. 28, 1914.—Henry Quilter, P.A.S.I., St. Malo, 13 Percy Road, Hampton-on-Thames. Construction of shuttering for moulding concrete or similar composite material whether reinforced with metal or not.

15,346. Dec. 21, 1914.—John Parson, jun., Parsonville Street, Teath, R.S.O., Cornwall, and B. C. Andrew, Biddicks Court, St. Austell, Cornwall, architect. Scaffolding and the like.

22,398. May 12, 1915.—H. B. Toone and H. S. Toone, Dulwich Road Mills, Radford. Finishing the varnished or enamelled surfaces of wood boards, wood veneers, cardboard, paper and other materials.

23,602. Dec. 5, 1914.—Thos. Barlow, Ash Lea, Stockport Road, Denton, Lancs., and J. B. Cooke, 421 Manchester Road, Denton, Lancs. Non-return or check valves.

23,651. Dec. 7, 1914.—C. A. Finch, 2,215 Sharp Avenue, Spokane, Washington, U.S.A. Adjustable drawing curves.

23,673. Dec. 7, 1914.—Dated under International Convention, Dec. 8, 1913.—H. N. A. McLean, 302 Liggett Building, Wayne, Mich., U.S.A. Cleaning of water-closet seats.

24,425. Dec. 21, 1914.—N. M. Marinaro, 493 Ontario Street East, Montreal. Step ladders.

909. Jan. 20, 1915.—W. F. Baldwin, 126 St. Anns Well Road, Notts. Machine for sweeping roads and other surfaces.

3,481. March 4, 1915.—T. W. Rudd and W. T. Rudd, 12 Elmers End Road, Anerley, S.E. Portable fretwork machine without fly-wheel.

3,860. March 11, 1915.—R. G. Hislop, 7 Pitt Street, Edinburgh. Electric fire alarm contact makers.

12,049. Aug. 21, 1915.—G. R. Wright, 8 The Strand, Southampton. Device for the extension of ordinary ladders.

2,213. Feb. 11, 1915.—A. E. Sheppard, 64 Ingatestone Road, Woodford Green. Rounded self-supporting combined channel curb and grid for conducting waste water to drain.

23,592. Dec. 5, 1914.—Richmond Gas Stove and Meter Co., Ltd., and Harold Hartley, Academy Street, Warrington, Lancs. Gas burners.

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THE Royal British Colonial Society of Artists have erected a tablet in the church of King Charles the Martyr at Falmouth to the memory of Mr. William Ayerst Ingram, the founder, and for twenty-six years the President of the Society. The memorial is the work of Mr. Alfred Drury, R.A., and was on Tuesday unveiled by Mr. G. P. Jacomb-Hood, vice-president of the Society, whilst Mr. T. C. Gotch, the President, gave a short address.

VARIETIES.

MR. CHARLES BEAN KING, of Frognal, Hampstead, head of C. B. King, Ltd., builders, died on October 7, aged eighty, leaving property of the value of £32,433.

A NEW high altar has been placed in St. Mary's Roman Catholic Church at Kelso. It is built of Swinton stone, and has a baldachino of Spanish mahogany. The design, which includes the subject of the Annunciation, is by Mr. Archibald Macpherson, F.R.I.B.A., Edinburgh.

MR. JOHN SUTCLIFFE, architect, of Todmorden and Hebden Bridge, died at Harrogate on Sunday, aged seventy years. He had built up an important business in the Calder Valley, and was the designer of many of the chapels and schools and the better-class houses in the area. He was estate agent for several well-known families.

THE death last week of Mr. John Snare, one of the Brandon (Suffolk) flint knappers, has brought to a close a long family association with this prehistoric industry. The family first became connected with flint knapping or breaking early in the fourteenth century, and ever since the business has passed from father to son.

THE Public Health Committee of the Bethnal Green Borough Council, in a report to the Council, again express concern at the delay in dealing with the Brady Street housing scheme in the borough. They are fully aware of the need of economy, but they are of opinion that it is false economy to withhold expenditure in urgent public health matters.

AT the last meeting of the Chorley Town Council a cheque for £150 was granted to Messrs. Woodhouse & Howard, architects, on account of their expenses in connection with the preparation of plans and estimates of the proposed public baths. The plans, &c., were approved, and the Town Clerk directed to make application to the Local Government Board for a provisional sanction to the borrowing of £10,000, being the estimated amount required for the provision of public baths.

ON the 3rd inst. the funeral took place at Rugby of Mr. W. J. Saville, a director and manager of Messrs. Foster & Dicksee, builders, who have undertaken many big contracts in London and the provinces. Entering into the employ of the firm as a junior clerk, Mr. Saville rose to the position of manager. He was well known in Midland building circles. He had been chairman of the Rugby Master Builders' Association and of the Rugby Building Society.

THE Governments of New South Wales and South Australia have authorised their respective Agents-General in London to enter into negotiations with the London County Council and the Duchy of Lancaster for the acquisition of a joint lease of certain property in the Strand, near Savoy Street, as a site for Government offices for the two States named. The property referred to adjoins the new offices of the Western Australian Government Agency.

THE late town clerk of Dudley (Mr. H. C. Brettell) collected a large number of engravings and paintings representing local scenery, buildings, and events, some of which were of considerable value owing to their rarity. They were placed on view in the Corporation Art Gallery many months before the owner's death, and aroused much interest. The late Mr. Brettell was anxious that they should become the property of the Corporation, and agreed to accept £315 for the whole collection. The Public Works Committee of the Town Council now state that £105 had been received as the result of the appeal for subscriptions towards the purchase of the collection, and recommend that the agreed amount with the late Town Clerk for such purchase be paid to his executors.

A DISPUTE in the building trade in Plymouth, which affected the several branches of the trade, including carpenters and joiners, plumbers, masons, and plasterers, and threatened at one time to lead to a serious strike, has been settled by agreement. The demand put forward by the workmen was for an increase of a penny per hour, their reason being the increased cost of living. The employers were unwilling to make the concession, and in the course of the negotiations that followed, the advice of Sir George Askwith was obtained. Last week a conference between the employers and workmen, at which the executive officers of the men's union from Manchester were present, took place, under the presidency of Mr. A. R. Debnam, chairman of the employers' organisation, and in the final result the employers, instead of the demand of 1*d.* per hour increase, offered a war bonus of 2*s.* per week to each man, which the men accepted in settlement of their claim. The agreement has been signed.

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THE
Architect and Contract Reporter.
FRIDAY, JANUARY 14, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

CONTRACTS OPEN.

BAILDON.—For erection of two semi-detached houses in Westmoor Avenue, West Lane. Mr. Arthur Sykes, architect and surveyor, Westmoor Avenue, Baildon.

BARROW-IN-FURNESS.—Jan. 26.—For extensions to the refuse destructor buildings, Cavendish Street, for the Corporation. The Borough Engineer, Barrow-in-Furness.

HELSTON.—Jan. 19.—For the works of internal and external repairs, &c., at Helston Police Station, for the Cornwall County Council Standing Joint Committee. Mr. L. D. Thompson, county surveyor, County Hall, Truro.

HUDDERSFIELD.—Jan. 19.—For the excavators, masons and bricklayers, carpenters and joiners, plumbers, slaters, plasterers, painters and concretors' work required in the erection of engineering works in St. Thomas's Road. Send names by Jan. 19 to Messrs. J. B. Abbey & Son, architects and surveyors, District Bank Chambers, Market Street, Huddersfield.

IRELAND.—Jan. 24.—For erection of three cottages at their Richhill Station, for the Great Northern Railway Co. (Ireland). Deposit £1 1*s*. The Engineer's Offices at Dublin and Belfast, and Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

IRELAND.—Jan. 27.—For concreting of passenger platforms at Galway Station, for the Midland Great Western Railway of Ireland. Deposit 10*s*. Mr. W. P. O'Neill, chief engineer, Broadstone Terminus, Dublin.

IRLAM (LANCS).—Jan. 24.—For the building of seventy-eight houses on three sites, as follows: thirty-two houses on site No. 1; twenty-eight on site No. 2; and eighteen on site No. 3, for the Irlam Urban District Council. The contractor may quote for the whole of the houses or any one or more of the sites. Deposit £5. Mr. R. H. Winterbottom, surveyor, Council Offices, Irlam.

KENDAL.—Jan. 21.—For restoring 95 Stricklandgate to its original size by adding cottages at the rear and making out a garage: alterations, renewals, and repairs. Mr. S. Shaw, F.R.I.B.A., architect, Kendal.

MANCHESTER.—Jan. 21.—For the execution of general contractors' and plumbers' work that may be required in connection with the drainage of houses and other premises for twelve months ending March 31, 1917, for the Corporation. Deposit £1 1*s*. for each of the eight sections. Mr. H. Prescott, manager of the Drainage Department, Municipal Offices, Manchester.

SCOTLAND.—Builders, wrights, &c., who may wish to tender for single or all trades required in the erection of not less than one nor more than three cottages proposed to be erected in connection with Laigh Linthills (Lochwinnoch) Small Holdings Scheme are invited to lodge their names forthwith with the Secretary, Board of Agriculture for Scotland, 29 St Andrew Square, Edinburgh.

WHITLOCKSWORTHY.—Jan. 31.—For repairs and alterations to farm buildings at Whitlocksworthy, S. Milton, near Kingsbridge. Messrs. Bourne & Sons, land agents, Totnes.

TENDERS.

BIRMINGHAM.

For works, &c., in connection with the scheme for the extension of the temporary generating station at Nechells, for the Electric Supply Committee.

Accepted tenders.

Babcock & Wilcox, Ltd., London, three boilers, with superheaters, chain-grate stokers, chimneys, induced draught fans, &c.	£17,000 0 0
E. C. & J. Keay, Ltd., structural steelwork	5,800 0 0
Davenport Engineering Co., Bradford, cooling towers, including foundations	5,550 0 0
J. J. Shardlow, foundations, engine, and boiler house	3,500 0 0
H. Morris, Ltd., Loughborough, coal-handling plant, overhead telpherage system	3,500 0 0

BISHOP AUCKLAND.

For the erection of a new engine house at the waterworks, for the Urban District Council.

Accepted tenders.

T. Manners, joiner	£189 15 0
J. Mascall, slater	51 0 0
D. Latham & Co., electric lighting	36 0 0
S. Kirby, plasterer	30 0 0
J. Cottrell, painter	16 12 6

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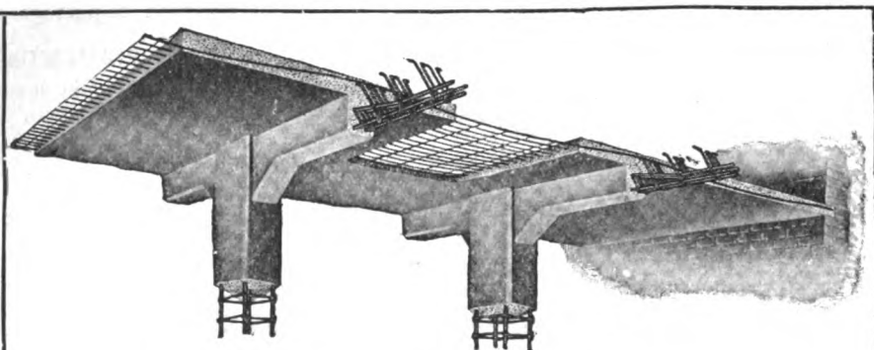
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ENGLISH FORESTRY ASSOCIATION.*

THE Association was formed, after thorough investigation of all aspects of the forestry problem, to find a solution which, I am convinced, is bound up with the extent of the support it shall receive.

We now have a golden opportunity to try to remedy matters by joint action, since the public is sympathetic in discouraging imports, and consumers wish to avail themselves of native supplies.

An independent and influential body can succeed where individual and unorganised efforts would fail. A central body in close touch with estates, merchants, and consumers, must possess special information and be in a far stronger position to ensure good results in the sale of timber than are individuals working separately.

Let me summarise some of the details of our work:—

1. We keep a register of firms who supply goods made from English timber, and we give their names to Government departments and to all other people open to contracts or sales.

2. We keep a register of consumers who require English timber for their business, and we help them in every way possible to obtain, with the least trouble, the necessary supplies of the most suitable timber.

3. We keep a register of timber merchants, with details of the timber they consume or special trades for which they cater; we give their names where converted timber or such goods as they supply are required; and assist them in competing with imported timber. We also put them in touch with estates which have timber for disposal, and help them to secure the supplies of timber which they require.

4. We place estates who write to us offering timber for sale in touch with merchants requiring timber, selecting the best buyers in each case.

5. We collect and classify valuable information on practical points concerning timber and its markets, and we issue this information in leaflet form. We have experienced representatives in different districts, and give to members information relating to local and special demands. Only by means of a fuller knowledge of every section can we make proper use of our native supplies and their markets, and ensure each section receiving its due part of the price paid by the consumer.

These being some of our activities, what is, or should be, the attitude towards them of the various parties interested in the growth and disposal of timber? I will say a few words on this point, since we wish to co-operate with all interests.

1. *The Landowner.*—As he will benefit more than any one else by increased prices of, and demand for, native timber, he should support the Association wholeheartedly, and be its chief financial backer. His subscription may be regarded as a good investment, since it gives a direct return, and would be recouped handsomely even by one small transaction.

2. *The Land Agent.*—He will be saved time and trouble by being put in direct touch with selected purchasers, and by assistance in the sale of timber. His interests are not prejudiced, since we do not conduct negotiations nor charge commission. We prefer to act with agents rather than with owners; if an owner is not represented, we often suggest the names of experienced agents. Even large estates must benefit by improved demand and prices for timber and fuller information.

3. *The Auctioneer.*—We post catalogues of forthcoming auction sales to selected buyers. Since this encourages outside competition, it should be the auctioneer's interest to give us his support. Much more knowledge and care is required both in lotting, describing, and advertising the timber offered. It is in the auctioneer's interest to co-operate with us, especially by ensuring successful sales and giving him information and help.

4. *The Timber Merchant.*—When the Association was formed many merchants undoubtedly felt rather nervous, but the best of them now realise that our work benefits the trade. Merchants appreciate our recommending them for contracts, influencing orders, assisting them to compete with imported goods and timber, and putting them in touch with estates able to supply timber which they require.

5. *The Consumer.*—Even before the war there was a healthily increasing desire on the part of consumers to encourage native supplies. This was partly due to the spade-work of the Association. The increasing number of inquiries proves that the consumer welcomes our work enthusiastically, especially where it helps him to find and organise supplies.

There is no short cut to the solution of so intricate a problem as ours, although a considerable advance has been made. Many will testify to the help and information received and improved results obtained. I am content to leave this matter and also our work during the war in their hands. When the Association was formed some people expected that immediate results would be forthcoming in every direction. They little realised how deep-rooted were the influences we had to attack. Considering the diverse nature of the supplies and markets in this country, and the enormous consumption of timber, much time was needed in the preliminary work of organisation. We had got through the necessary spade-work, and were arranging an exhibition on a large scale in London last year, when the war broke out and stopped us. This exhibition would have illustrated strikingly the uses of English timber, and in particular the directions in which better returns and increased demands could be obtained. It was also proposed to arrange conferences with consumers and manufacturers with a view to extending greatly the use of English timber, and discussing the obstacles to be surmounted.

The war has now made our work of urgent importance, particularly in view of the issues at stake. Our native timber supplies must be organised and be ready to meet any sudden developments. I appeal to all to help and co-operate with us in this time of national emergency.

* Extracts from a Paper read before the Surveyors' Institution by Mr. Martin Collier Duchesne, F.S.I., on December 13, 1915.

THE AMERICAN BUILDER.*

By R. CLIPSTONE STURGIS, President, American Institute of Architects.

IT is a great pleasure to be with you and have an opportunity to speak to the builders who are gathered here, and it is a privilege and an honour to represent the American Institute of Architects on this occasion. From the derivation of this word the architect is a master builder, and you also have been called master builders; and yet neither of us can really lay claims to-day to that title. It is possible, though not probable, that in the past, when the building operations were simpler than they are to-day, there may have been, here and there, individuals who were justified in calling themselves master builders; men of imagination to design and plan, and knowledge to construct and execute, but to-day no one man can perform all this. Co-operation is the keynote of the work which jointly we bring to completion. Competition and strife there will be also; these have their places and must always exist; but it is co-operation, the unselfish working together, not competition and strife, the selfish struggle, which should control and harmonise our work.

We are members of one great organisation. Labour, the strength and skill of hand which realises our visions; administration, the executive ability which organises all the intricate machinery; vision which, with quickened imagination, conceives the whole. These three are all essential to building, and unless all play their part and do their share no work will be even approximately perfect.

The architect stands in a peculiar position of responsibility and trust. He is employed and paid by the one who provides the capital for the undertaking, but his

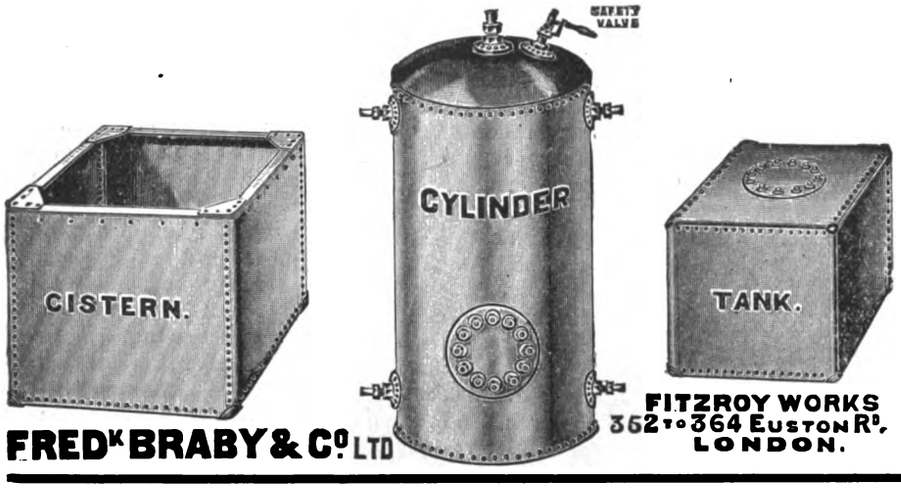
* Address delivered before the American Builders' Week Congress at San Francisco.

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duties and responsibilities toward the builder are equally exacting. There was a time, not so long ago either, when the architect contented himself with making a few drawings and a sketchy specification, and relied on a builder in whom he had confidence and who was familiar with the office, to supply what was lacking in plans and specifications. If an owner desired competitive bids, none was invited to bid but those who knew the office and what it expected, and would figure accordingly. Occasionally an owner might insist that a builder outside this favoured group should figure, and possibly he might be sufficiently simple-minded to figure only what was shown on plans and called for in the specifications. Thus he might win the contract. When the work was finished and his losses counted, he would wisely forget them, and make friends profitable for the future. You all know these things as well as I. You all know those comforting blanket clauses under which the architect, generally ignorant or incompetent, sought to protect himself. The city of Boston, in this case the owner, not the architect, had at one time in its contract not only the usual provision, so that anything that appeared either in the plans or in the specifications was included, but also a provision that anything necessary to carry out the full intent and meaning of the building, whether or not it was called for, was included. The owner and the architect were the sole judges to decide what was covered under this clause, and the contractor's only chance was that the city would not enforce such an agreement.

In all such matters of right and of wrong, of justice and of fair play, the architect has had a very serious duty to perform, and it is only of recent years that the profession generally has realised its responsibility. Toward the owner the architect necessarily assumes a position of trust. He is on his honour to see that the money put in his hands is expended wisely. It is no easy task, for economical building is difficult. Toward the builder the architect has still graver duties, because less clearly defined, and because he is here performing a service paid for, not by the builder, but by the owner. Yet he must many times, in holding the balance true, give his opinion against the owner and for the builder. There are times too, when he ought to give his judgment for the builder and against himself. How often the architect has failed in those grave duties you know as well as I. If to-day architects are more fully alive to their responsibilities, it is the first step towards discharging them, and they will turn to the builder for help. Not one of us can work well without the help of others. It is builders, not other architects who will help us to make our drawings complete and accurate, our specifications correct and in accord with the best modern methods and practice. Half our troubles are eliminated by complete and accurate documents on which to base the contract.

Co-operation then is the plea which the Institute makes to the builders. Trust in each other and an earnest desire to work together for the good of all. For the past six years the Institute has been working on a form of agreement and the general conditions of the contract to replace that which was issued some twenty-five years ago, and has now outlived its usefulness. A first attempt was made three years ago, and an edition published. The old organisation which joined the Institute in the first agreement, the National Association of Master Builders, was no longer active, and this first edition was put on the market with very little help or advice on the part of the building trades. The new "Standard Documents" met with very little success and with a great deal of adverse criticism. Some of this was merited, but much was merely the result of misunderstanding. The Institute at once began a revision, and this time made definite agreements for consultation with builders in various parts of the country. The result is the agreement and general conditions now published which bears the endorsement of many strong organisations representing the building trades. I earnestly urge you to adopt and use these forms, put them to the test, study and constructively criticise them. They are not complete, are not perfect, but they are far better than anything we have had before. Here again let me urge co-operation.

After all co-operation means consideration of others and the recognition of the work of others. Understanding and appreciation are at the root of any effective work. The whole is greater than any part; artist, engineer, builder, skilled mechanic and unskilled labourer, all have their part to play in the complete building. All are interested and interdependent. I almost hesitate to touch upon one, almost the gravest of our responsibilities, that toward organised labour. So long as the labour unions stand only for their best ideals, good service for good pay, shorter hours and more efficient work, things which make of the men better citizens, more fit to assume and bear their share in the common burden of Government, just so long will the unions receive the full support and encouragement of every right-minded citizen. But the moment this or any other organisation, whether of labour or of capital, works for selfish aims and against the good of the community, then it is evil, not good, a curse and not a blessing. You know as well as I that the great bulk of the men who belong to the unions in the building trades are competent, reliable and honest, and that the danger lies in those indifferent mechanics fatally gifted with fluent tongues, whose one stock-in-trade is trouble, and whose one object is to stir up strife. Help them to see that it is not strife but co-operation that will most surely give labour the honourable position to which it is entitled.

The architect's position in all these relations is a peculiar one of responsibility and trust. His is a difficult position to fill. Without the help of the builders, it is impossible to fill it. On behalf of the American Institute of Architects I ask your help and your co-operation in the great work which both of us have at heart.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 21,851. November 2, 1914.—Concrete Piles, Pillars, Beams, and other Concrete Structures.—W. J. Stewart, Elgin Street, Belfast, Down, and John Woolcock, of J. & W. Stewart, Caxton House, Westminster, London. This invention relates to concrete piles, pillars, beams, and other structures, in the concrete of which steel rods are imbedded and held in position by struts and ties, and has for its object the provision of a simple and efficient means for tying the bars together and containing them in their proper relation to each other, the means being designed so as to economise material and labour in the construction and fixing of the ties; to strengthen the hold on the concrete at the corner bars, and so that the material of the ties may be so disposed as to give a better result than hitherto in supporting the bars. The wire of which the ties are preferably constructed is bent in such a way as to embrace once or twice the central rod of three rods and to be looped round the other two, the positions of which, in section, form an angle with the central rod, the end portions of the wire being formed into a circle to embrace the middle rod of the three by twisting them together to tighten the wire circle on the central rod, and in such a way that the twisted ends of the wire may project from the central rod towards the heart of the concrete. Fig. 1 is a section of a reinforced concrete pile, beam, or pillar, showing the application of the ties. Fig. 2 is a section of a pile or column of different shape, and with a large number of reinforcing rods. Fig. 3 is the plan of a link used in connection with the arrangement shown by fig. 1, drawn as it is made before being placed in position on the reinforcing rods. Fig. 4 is an end view of fig. 3. Fig. 5 is the plan of another form of link which may be used in connection with the arrangement shown by fig. 1. Fig. 6 is an end view of fig. 5. The ties *a* may be made as shown by figs. 3 and 4, or by figs. 5 and 6, each of one piece of wire, with the ends of the wire finished off at the middle of the link, suitably for embracing the middle rod at *b*, and with the ends *c*, *c* of the wire projecting inward from the angle. The ties may be made in the workshop in any convenient manner; for instance, the wire

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may be bent round three studs or pegs of the same diameter and at the same relative positions as the reinforcing rods on which the ties have to be fixed. The length of wire for the ties is decided beforehand and cut to the required length, and for making the link as shown in figs. 3 and 4 the wire is looped on to the centre stud, having both ends of equal length and parallel to each other, the width between the parallels being decided by the diameter of stud employed. The ends of wire at this stage lie centrally between the two other studs, which may form a right angle with the centre stud. The ends of the wire are then crossed close

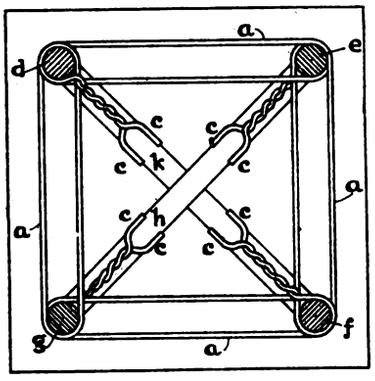


FIG. 1

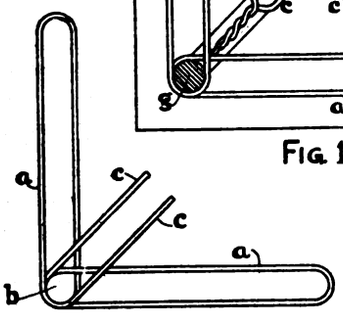


FIG. 3



FIG. 4

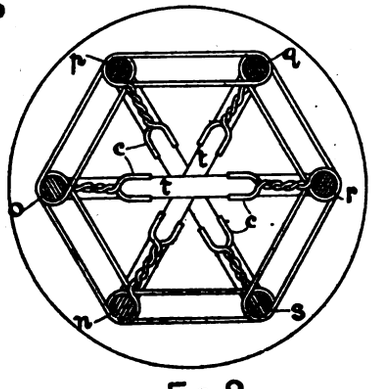


FIG. 2

up to the centre stud, loops are then formed with the wires at the other two studs, the ends of the wire then returning to the centre stud and bent round sufficiently on opposite sides for the ends to lie centrally between the outer studs and parallel with each other. For making the link shown in figs. 5 and 6 the wire is centrally laid on the outer side of centre stud, with the equal ends on the inner side of the outer studs forming an acute angle with the centre stud. The ends of the wire are then looped around the outer studs and returned to the centre stud, being afterwards bent round sufficiently on opposite sides for the ends to lie

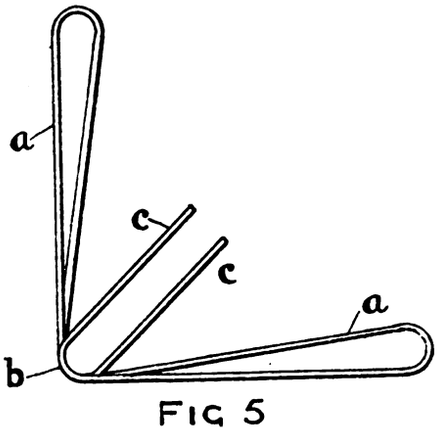


FIG 5



FIG. 6

centrally between the outer studs and parallel with each other. The ties, when made, are placed in position on the rods *d*, *e*, *f*, *g*, and are tightened thereon by the ends *c*, *c* being twisted together, as shown by fig. 1, a suitable wrench being used for the purpose. The ends of the wire *c*, *c* are finished off in the form of a fork, in known manner, to give a good grip in the heart of the concrete. Any suitable well-known form of strut may be used to assist the action of the ties in stiffening the reinforcing rods, as, for instance, flat bars *h*, *k*, placed between the rods *d* and *f* and *e* and *g* at opposite corners of the structures. Or any other form of strut may be used, this invention relating only to the ties. Four ties may be grouped together at one position along the rods *d*, *e*, *f*, *g*, completing the circuit of the rods with one tie tightened on each rod, or two ties may be tightened, one on each of the rods *d*, *f* at opposite corners of the structure at one position lengthwise of the rods, and two ties at another position tightened on the two rods *e*, *g* at the other two corners; or one tie only may be fixed at each position lengthwise, but with four adjacent ties tightened on each of the bars *d*, *e*, *f*, *g* successively to complete the circuit. In fig. 2 the ties are made to embrace the rods *n*, *o*, *p*, *q*, *r*, *s* in groups of three, for example, *n o p*, *o p q*, *p q r*, &c., the ends *c*, *c* of the wire being twisted together at the middle rod of each group for tightening the tie on the reinforcing rods.—November 3, 1915.

VARIETIES.

MR. R. STEPHEN AYLING, F.R.I.B.A., has removed his offices from 8 Dartmouth Street, Westminster, S.W., to Bedford House, 8 York Place, Baker Street, W. His new telephone number is Mayfair 4522.

SIR HOWARD FRANK, a partner in the firm of Messrs. Knight, Frank & Rutley, land agents and surveyors, has been appointed by the Minister of Munitions to be honorary adviser on land valuation to the Ministry.

BY the will of the late Mr. John Williamson, of Birkenhead, a bequest of £20,000 has been made to the borough of Birkenhead, on the death of his son, to be applied "in or towards the erection of an art gallery, museum, or other public institution."

THE return of votes issued by the Executive of the Amalgamated Society of Carpenters and Joiners on the proposal to pay twopence per member for six weeks to assist the dependants of soldier members on active service shows an overwhelming majority in favour despite a large number of abstainers. The official figures are: In favour, 14,141; against, 855; majority in favour, 13,286. The membership of the society returned is 93,487.

OUR readers of the older generation will learn with regret of the resignation of Mr. R. T. Wilkinson of his position as a director of Claridge's Patent Asphalte Co., Ltd., thus severing a connection which he has maintained unbroken for sixty-three years. The good wishes of all his friends will go with him in his well-earned retirement, and it will be a source of gratification to hear that the new director of this company is Mr. W. J. Robinson, who, up to a few years ago was connected with the timber trade, and may be known to some of our readers.

MR. HARRY HEMS, of Exeter, died last week at the age of seventy-three. It was said of him that he was one of the most extraordinary men Exeter ever knew—a character which would have pleased him vastly. As an ecclesiastical sculptor in stone and wood he enjoyed what was in truth a world-wide reputation, and he won it by merit as well as by the quicker path of untiring publicity. A lasting monument in this country to his craftsmanship is the reredos at St. Albans Cathedral which he was entrusted to restore at a cost of about £10,000. Mr. Hems was an enthusiast in anything he undertook, whether it was a controversy, a contract, or an act of beneficence.

AT Wrexham Rural District Council last week it was reported that the first group of houses built by the Council for the working classes at Rhos would be ready for occupation in a fortnight. Seventy-five applications were received for twenty-two houses, but after the Council had fixed the weekly rent at 5*s*., plus rates (7*s*. 5*d*. inclusive), most of the prospective tenants withdrew. Only nineteen replied to a request to fill up forms applying for a tenancy. Nine of these refused the houses on the ground that the rents were too high. Others were stated by the committee to be unsatisfactory, and only five were recommended for acceptance. After a long discussion it was decided to accept the tenants recommended, and to ask the Housing Committee to report upon the whole scheme.

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THE
Architect and Contract Reporter.
FRIDAY, JANUARY 21, 1916

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

**** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

CONTRACTS OPEN.

BARROW-IN-FURNESS.—Jan. 26.—For extensions to the refuse destructor buildings, Cavendish Street, for the Corporation. The Borough Engineer, Barrow-in-Furness.

CHURWELL.—Jan. 31.—For the various works required in erection of three-storey warehouse, engine-house, engine-beds, gas-production plant, &c., at Millshaw Leather Works, Churwell, Yorks, for Messrs. W. L. Ingle, Ltd. Mr. T. A. Buttery, Licentiate R.I.B.A., architect and surveyor, Leeds, or at Queen Street, Morley.

HARTEST GREEN.—For erection of a house and shop at Hartest Green, Suffolk, for Messrs. Crickmore & Savage, grocers and drapers. Mr. J. Honeywood, Hartest, Bury St. Edmunds.

IRELAND.—Jan. 24.—For erection of three cottages at their Richhill Station, for the Great Northern Railway Co. (Ireland). Deposit £1 1s. The Engineer's Offices at Dublin and Belfast.

IRELAND.—Jan. 27.—For concreting of passenger platforms at Galway Station, for the Midland Great Western Railway of Ireland. Deposit 10s. Mr. W. P. O'Neill, chief engineer, Broadstone Terminus, Dublin.

IRLAM (LANCS).—Jan. 24.—For the building of seventy-eight houses on three sites, as follows: thirty-two houses on site No. 1; twenty-eight on site No. 2; and eighteen on site No. 3, for the Irlam Urban District Council. The contractor may quote for the whole of the houses or any one or more of the sites. Deposit £5. Mr. R. H. Winterbottom, surveyor, Council Offices, Irlam.

ISLEWORTH.—Jan. 26.—For certain alterations and repairs to be carried out (1) at the union offices and (2) at Warkworth House, for the Guardians of Brentford Union. Mr. F. E. Harmsworth, clerk, Union Offices, Isleworth.

LONDON.—Jan. 31.—For alterations, sanitary fittings, and other works at the Southwark Military Hospital, Dulwich Grove, Dulwich, S.E., for the Southwark Guardians. Deposit £5. Mr. A. Saxon Snell, F.R.I.B.A., 9 Bentinck Street, Manchester Square, W.

MANCHESTER.—Feb. 10.—For the work and materials required in erection of a power-house at their Bradford Road station, for the Gas Committee. Deposit £1 1s. Mr. F. A. Price, superintendent, Gas Department, Town Hall, Manchester, or Mr. J. G. Newbigging, M.I.C.E., Rochdale Road Gasworks.

SOUTH ZEAL.—Jan. 24.—For alterations, additions, and reseating the United Methodist Chapel. Mr. W. T. Endacott, South Zeal, Devon.

WALES.—Jan. 29.—For the conversion of Drymma House, Skewen, near Neath, into a home for feeble-minded persons, for the Glamorganshire Joint Poor-Law Establishment Committee. Mr. T. Roderick, architect, Ashbrook House, Aberdare.

WALES.—Feb. 2.—For erection and construction of alterations and additions at the Cardiff Sanatorium, Canton, Cardiff, for the Cardiff City Council. The City Engineer's Offices, City Hall, Cardiff.

WHITLOCKSWORTHY.—Jan. 31.—For repairs and alterations to farm buildings at Whitlocksworthy, S. Milton, near Kingsbridge. Messrs. Bourne & Sons, land agents, Totnes.

MR. G. GILBERT SCOTT is acting, we understand, as honorary architect in connection with the entire rebuilding of the "Star and Garter" at Richmond as a home for soldiers and sailors disabled by wounds received in the war. There will be accommodation for 235 men, who are each to have a separate room, and beds for fifty quite helpless patients.

THE Scottish Veterans' Garden City Association have accepted a site at Longniddry, in East Lothian, for the erection of one of their colonies. It is proposed to make a start with forty houses and two workshops which will be let to disabled soldiers who are to be trained for various forms of light work. Lord Dean of Guild Henry, F.R.I.B.A., is consulting architect.

THE extent to which railway companies own and manage some of the finest hotels in the country is not generally realised. In this connection the Great Central takes a prominent place. This company was also the first to provide dining-cars on the whole of the main line expresses. The refreshment rooms at the principal railway junctions and termini have been a feature for the past half century. A handy book has been issued by this enterprising line, containing quite a number of illustrations of their London, Sheffield, Grimsby, and New Holland hotels. The company possesses its own bakery and a laundry. The sections descriptive of the restaurant car service, tea rooms, luncheon baskets, conveyance of passengers' luggage, &c., contains useful information, and applicants can obtain the publication free by sending a postcard to Publicity Department, 216 Marylebone Road, London, N.W.

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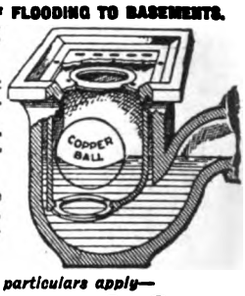


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WOOD IN BUILDING CONSTRUCTION.*

By E. A. STERLING.

WOOD as a construction material has always been universally used and is still available in any quantity and of any kind and is as good as ever. In fact, it is a better product than formerly because now definitely graded and is even being trade marked in some districts as a guarantee of quality. If its advantages, adaptability, and economy have been overlooked in late years, it is because it has not been promoted as have other building materials. This the lumbermen are now correcting.

As to availability, there has been much loose and incorrect publicity as to the growing scarcity and high prices of lumber. Good construction timber is neither scarce nor expensive. Nearly 3,000 billion of merchantable, virgin timber is standing in the United States, of which five-elevenths is in California and the Pacific North-West. This supply would meet present requirements for sixty-five years, without the new growth which is being assured by conservative cutting, fire protection, and planting on government and private land. As to price, government figures show that lumber values have risen but little and not nearly in the same proportion as other materials.

The promotion and educational work of the National Lumber Manufacturers' Association and the various other affiliated associations is teaching a wiser and better use of the lumber which is cut. In the good old days nobody figured much on permanence or durability. If they built something of wood and it fell down, or rotted down, they simply built another structure. To-day the tendency is to build better and to build for keeps, so that wood preservatives, creosote, &c., are used to give longer life to and to get better service out of the lumber which we use.

The needless waste of lumber and its incomplete utilisation, both in the forest and after manufacture, is an unfavourable condition to both producers and consumers. The lumber manufacturers in the United States at recent hearings before the Federal Trade Commission in Chicago clearly proved that 15,000,000,000 feet of lumber is wasted annually because of the unfavourable economic conditions affecting the industry. This enormous waste represents portions of the felled trees that cannot be taken out of the woods except at a loss. In other words, there is wasted every three years an amount of timber practically equivalent to the total consumption for each average year. If this were saved it would increase our available timber resources by over 30 per cent. About all that is needed to bring about this national economy of material is adequate public knowledge of the uses, requirements and values of wood as a construction material. Just so long as the consumer demands high-grade lumber at low-grade prices, 15,000,000,000 feet of usable low-grade timber will have to remain in the woods to rot; yet this same material would adequately serve many requirements for which more expensive and better lumber is now used.

From the standpoint of the builder wood possesses many advantages in all kinds of structures which deserve most careful consideration in comparison with other materials which are more vigorously promoted. In mill construction alone many recognised uses for wood are found. One of the main points to be emphasised is the use of mill construction in factories, manufacturing plants and commercial buildings which may become obsolete and need alterations to follow changes in manufacturing conditions. The value of this advantage of wood construction is shown in the statement that in the New England States there is more timber used in framing mills than all other materials combined; also by the attitude of the insurance companies through nearly equal rates on mill constructed buildings and the so-called higher-priced fireproof structures where sprinkler systems are installed and communications between floors guarded in each case. The advantage of mill construction over unprotected steel and iron is also well shown.

The advantages of a properly constructed mill or laminated floor is shown in the comfort to workmen, added stiffness and rigidity to the building, ease of repair when worn, and the ready fastening of light machinery at any place. Among other points is the use of short pieces of material in latticed trusses, girders, and curved supporting members, and the permanency of well-selected timbers, properly selected, so as to meet the specific requirements.

In the matter of fire protection, there is certainly no desire on the part of the lumbermen to overlook the enormous fire losses in the United States, and they are fully as interested as any other citizens or business men in the reasonable reduction of these losses. The important fact to get before the public is that wood is not a prime contributing factor in the fire losses of this country. Almost exactly 25 per cent. of the fires are other than building fires, and the character of contents and the carelessness of individuals rather than the type of construction are responsible for the great majority of the fires. Proper construction, whether the building is of wood or so-called "fireproof" construction, is an important factor. The skill of the engineer and the desire for safety have not as yet solved the problem of constructing warehouses, office buildings, factories, and dwellings that are proof against conflagration. We have numerous examples of what happens to "fireproof" buildings when the contents burn, and for commercial purposes it is evident that a wood-constructed building, properly equipped with a sprinkler system, is not only a low insurance risk, but as near proof against destruction by fire as any buildings that constitute the homes and farm buildings of the land, and the people need only to realise the fundamental fact that wood is best to build safely, economically, and well.

Experts entirely outside of the lumber business recognise the possibilities of wood in buildings which fully meet modern requirements of safety. James P. Whiskeman, C.E., Advising Expert for the New York State Factory Commission, is quoted as saying that: "Buildings are only relatively fire-resisting. The cost of building an absolutely fireproof structure, especially for dwelling purposes, is almost prohibitive, considering that stairways must be enclosed and all openings adequately protected. In the second place, the best fireproof doors, and more especially windows, so far placed on the market are only temporary protections at best. The point I am trying to make is that the zeal and enthusiasm of fire-prevention experts has led them to root against wood in every manner, shape and form in building construction regardless of cost, forgetting the most essential requirements, as above enumerated, without which a building built of fire-resisting material will not qualify in time of fire, no matter what the construction may be. As time goes on, however, we sometimes profit by experience, and whereas wood floors and trim, unless fireproof, were formerly excluded from buildings over a certain height, the best modern practice permits the use of wood flooring and a certain amount of wood trim. At the same time that wood was being excluded, stairways, elevator shafts, and other vertical openings were permitted to be unenclosed, showing the inconsistency of some of the requirements, while the occupancy of floors was limited regardless of exit requirements. Fire-prevention experts go through the country preaching fireproof buildings with all the arguments at their command. Some see nothing but fire walls; others the elimination of wood shingles; all are prepared with arguments galore to substantiate their pet theories, only to have a fire demonstrate the weakness of their much-cherished ideas."

To sum up the situation, we find that wood, to some extent and for some purposes, has lost caste as a build-

* From a Paper presented at National Congress of Builders and Building Material Men, at San Francisco, California.

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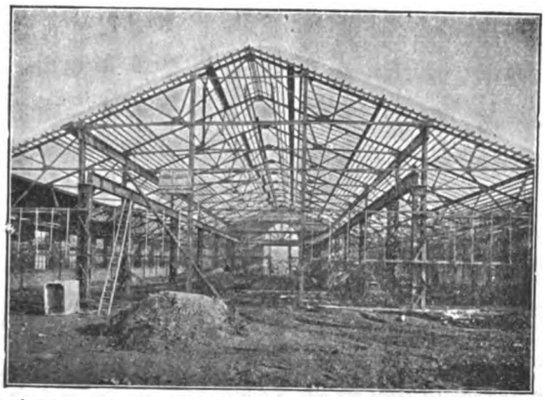
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ing material. This is not because it is any less valuable or desirable than formerly, nor because it costs any more. It is rather because it has not been energetically promoted. Any builder knows the advantages of lumber, and his greatest danger is that he will be led to use some material less suited or less economical, because of the advertising and promotion claims of other materials. The lumbermen are now ready to give help and service, under the realisation that modern selling methods are advisable, even with an old-established product you are all familiar with.

THE MIDLANDS BUILDING TRADE.

THE annual meeting of the Midland Centre of the National Federation of Building Trades Employers of Great Britain and Ireland was held in Birmingham on the 13th inst. The president, Mr. Ralph Webb, Birmingham, took the chair.

In the annual report it was stated that, speaking generally, the condition of the building trade in the Midland Centre during the past twelve months had been very unsatisfactory. It was true that in two or three towns—notably Birmingham, Coventry, and Wolverhampton—the erection or extension of factories required for war work had involved a certain degree of activity, but the demand on the part of private individuals and public bodies for building operations had been insignificant. Then, too, the abnormal conditions brought about by the war had made the contractor's lot a by no means happy one.

Applications for war bonuses were made in most parts of the centre. The following towns had granted increases of war bonuses:—Birmingham ($\frac{1}{2}d.$ per hour to all operatives with whom the association has agreements and who are not already in receipt of a war bonus or increased payment, from October 24 last until three months after the end of the war); Bromsgrove (2*s.* per week war bonus to married men and 1*s.* to single men, all trades, from December 1 last until three months after the close of the war); Dudley (labourers advanced on April 1 last from $5\frac{1}{2}d.$ to $6\frac{1}{2}d.$ for two years, and bricklayers, carpenters, and joiners from $8\frac{3}{4}d.$ to $10d.$ for a like period as from April next); Derby (war bonus of $\frac{1}{2}d.$ per hour to labourers during the winter months and to plumbers of $\frac{1}{2}d.$ for the period of the war); Leicester (bricklayers', masons', and plasterers' labourers increased from $7d.$, $7d.$, and $7\frac{1}{2}d.$ to $7\frac{1}{2}d.$, $7\frac{1}{2}d.$, and $8d.$ respectively, bricklayers from $9\frac{1}{2}d.$ to $10d.$, carpenters from $10d.$ to $10\frac{1}{2}d.$, masons from $9\frac{3}{4}d.$ to $10\frac{1}{4}d.$, and plumbers from $9\frac{1}{2}d.$ to $10d.$); Northampton (war bonus of 2*s.* 6*d.* per week to all trades from June 5 last until three months after the close of the war); Stourbridge (bricklayers, carpenters, and labourers, $\frac{1}{2}d.$ advance for the period of the war); Walsall (plumbers increased from $9d.$ to $10d.$); West Bromwich (carpenters and joiners increased from $9\frac{1}{2}d.$ to $10d.$); and Worcester (war bonus of 2*s.* per week to labourers during short time only).

The Amalgamated Society of Wood-cutting Machinists, the United Builders' Labourers' Union, and the Electrical Trades Union, had been admitted to the Conciliation Board scheme, and applications for admission had been received from the Navvies', Builders' Labourers', and General Labourers' Union, and the Amalgamated Slaters' and Tilers' Provident Society. The Operative Bricklayers' Society (London) had been readmitted to the scheme. The associations affiliated to the centre now numbered twenty-three—a decrease of one, the small association that had had for some years a struggling existence at Long Eaton having become defunct. The membership of the branches was on the whole maintained. The Birmingham Association was still advancing, registering a total membership of 291, as against 268 the previous year. The individual membership of the centre was still limited to three firms.

The accounts showed a balance in hand of £96.

The report was approved, says the *Birmingham Daily Post*, and the officers for 1916 were appointed:—Mr. F. T. Doleman (Nottingham) president, Mr. C. Garlick (Coventry) and Mr. G. Elvins (Birmingham), vice-presidents, Mr. H. Willcock (Wolverhampton) treasurer, and Mr. F. G. Hodges (Burton-on-Trent) and Mr. William Moffat (Birmingham) auditors.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 1,388. Jan. 28, 1915.—Plug Cocks. Archibald Lees and Walter Lees, of Standard Works, New Brunswick Street, Halifax, York.—This invention relates to plug cocks and stop cocks of the type having a hollow conical plug situated within the casing and provided with a spring surrounding the spindle and adapted to exert pressure on the narrow end of the plug. In this type of valve it has been

FIG. 1.

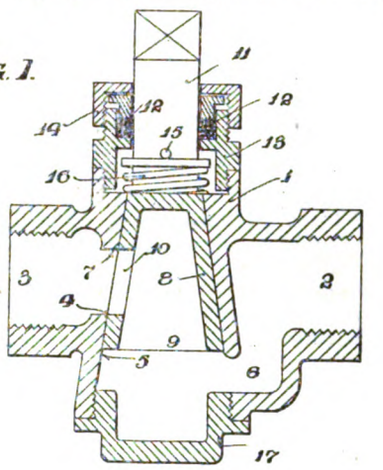
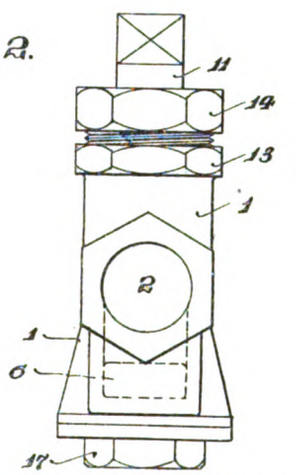


FIG. 2.



proposed to employ a stuffing box encircling the plug spindle. The object of this invention is to construct an improved plug cock for steam, gas, water, air, or other fluids, which will retain all the advantages of the different constructions, and which can be packed under pressure. Fig. 1 is a sectional elevation, and fig. 2 is an end view of the plug cock. The casing 1 has inlet and outlet openings 2 and 3 respectively, between which is formed within the casing a conical chamber 4, the larger diameter 5 of which is at the lower end. This chamber communicates with the inlet opening 2 by a port 6 of oblong shape at its lower end, and with the outlet by a suitably shaped opening 7 concentric with the axis of flow. Fitting within the chamber 4 is a hollow plug 8 open at its lower end 9 and extending down substantially to the level of the upper edge of the oblong inlet port 6, but protected thereby from the entering fluid or liquid. An opening 10 in the wall of the plug 8, coinciding in size and shape with the outlet opening of the chamber, is adapted on rotation of the plug, to open and close such outlet opening and thus permit and prevent flow through same. The upper end of the plug has a stem 11, which

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extends vertically through a stuffing box 12, the screwed top 13 of which screws into the top of the casing 1; a screwed retaining cap 14 is placed over the end of the stuffing box. This construction allows access to the stuffing box without disturbing the conical plug and spring. Confined on the stem between the top of the casing and a pin 15 passing through the stem is a spiral spring 16, which acts to hold up the plug against the seating formed by the conical interior of the chamber. A loose washer may be inserted between the top of the casing and the bottom of the spring if desired. A hollow cap nut 17 screwed into an opening in the bottom of the casing affords access to the interior of the plug when desired. Since the liquid or fluid enters at the bottom of the hollow plug and passes out through a port or opening in the wall of the plug, it never comes into contact with the ground part or outer surface of said plug, whether the cock be open or closed, so that damage to such ground surface through the cutting action of the liquid or fluid under pressure is avoided. Since the plug is held in position by means of the action of the spring on its stem, liberty of expansion or contraction is afforded, and, combined with the internal pressure acting on the hollow plug, the construction of the stuffing box enables it to be repacked, if necessary, under pressure.—Dec. 8, 1915.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 24,103. Dec. 15, 1914.—Robert Affleck, 23 Leppoc Road, Clapham, S.W. Portable buildings.

4,574. March 24, 1915.—Chas. Showell, Stirchley Brass Foundry, Stirchley, Birmingham. Emergency-exit door fastening.

8,551. June 9, 1915. (Dated under International Convention June 29, 1914.) Julius Gresly, Kilchberg, near Zurich. Manufacture of hydraulic cement.

22,590. Nov. 16, 1914.—C. L. H. Jackson, 16 Withipoll Street, Ipswich, Suffolk. Geyser or water-heater.

24,386. Dec. 21, 1914.—G. W. N. & G. F. Naylor, Denby Dale, near Huddersfield. Purification of sewage.

5,996. April 21, 1915.—S. R. Parkes, Pretoria Works, New Road, Willenhall. Cases for sash pullies, locks, or the like.

8,986. June 18, 1915.—Walter Grafton, Airlie, Monreith Road, Newlands, Glasgow. Gas fires.

10,100. July 10, 1915. (Dated under International Convention July 30, 1914.)—Lucie Dreyfus, 11 Rumelinbachweg, Basel, Switzerland. Panels for doors, walls, and the like.

12,068. Aug. 21, 1915.—Fletcher, Russell & Co., Ltd., and Walter Banks, Palatine Works, Warrington, Lancs. Gas fires.

24,438. Dec. 21, 1914.—W. H. Shotwell, Glen Cove, Nassau, N.Y. Weather vane indicator.

24,630. Dec. 24, 1914, and 22,735, Nov. 19, 1914.—Walter Jones, J.P., The Uplands, Stourbridge, Worcester, and Jones & Attwood, Ltd., Titan Works, Ambleside, Stourbridge. Apparatus for the purification of sewage and analogous liquids.

24,693. Dec. 28, 1914.—A. G. France, 29 Southampton Buildings, W.C. Fastening device for doors, casements, and the like.

1,232. Jan. 26, 1915.—Henry Sharrow, 100 Lewisham Road, Smethwick, Staffs. Ball taps or ball valves.

1,718. Feb. 3, 1915.—W. A. Brookes, Unett Street Works, Smethwick, and J. W. Mason and John Mason, 11 Beaks Road, Smethwick. Stove grates.

18,831. Aug. 19, 1914.—Jacques Quost, 21 rue de la Rochefoucauld, Paris. Moulds mainly applicable for building chimneys of reinforced concrete.

22,845. Nov. 21, 1914.—Thos. Potter, 22 Havelock Road, Croydon, Surrey. Glazing bars for glass roofs and other purposes.

24,087. Dec. 15, 1914.—P. F. Bunyard, 57 Kidderminster Road, Croydon. System of construction for use in the erection of frame structures.

24,164. Dec. 16, 1914.—A. L. Nesson, 52 Old Bailey, E.C. India-rubber and the like stair treads and mats.

24,239. Dec. 17, 1914.—C. S. Jeffry, 76 Merchant Street, Rangoon. Slide rule.

4,721. March 26, 1915.—F. H. Harrison, Belmont Works, Villiers Street, Willenhall. Padlocks.

5,879. April 20, 1915.—W. H. Sturge, Premier Works, Sheepcote Street, Birmingham. Combined electric switch and wall plug.

7,941. May 28, 1915.—E. P. Wells, 94 Larkhall Rise, Clapham, S.W. Construction of floors.

3,911. March 11, 1915.—G. H. Mills, 22 Melbourne Avenue, Bowes Park. Copper and bath combination.

Any of the above specifications may be obtained from J. D. Roots & Co.

VARIETIES.

MR. JOSEPH TATE, of Wallasey, formerly of 5 Sydenham Avenue, Liverpool, builder, left net personalty £1,164, and £12,220 gross.

MR. HENRY A. CHEERS, architect, of 73 Philbeach Gardens, London, died on the 15th inst. of heart failure. The funeral took place on Tuesday last.

LIEUTENANT SAMUEL HALL, 8th Battalion Manchester Regiment, of Cleveleys Hydro, Blackpool, formerly of Didsbury and Withington, architect, who was killed in Gallipoli on June 4, has left property of the value of £22,700, with net personalty £2,885.

THE Board of Management of the King Edward VII. Hospital, Cardiff, had under consideration last week a scheme of extensions which will cost £46,506 and provide 151 additional beds in various wards. Towards this amount an anonymous gentleman has since promised 10,000 guineas. The scheme was outlined by Colonel E. M. Bruce Vaughan.

ALL the competitive designs submitted for the alteration and extension of the Harris Academy, Dundee, will be open to public inspection in the Victoria Art Galleries, Dundee, from Friday, the 21st instant, to Wednesday, the 26th instant, both dates inclusive, between the hours of 10 A.M. and 4 P.M.

SECOND-LIEUTENANT A. H. COURTENAY (late acting-manager of the publication department, General Electric Co., Ltd.), has sailed for the Mediterranean. After about two months in France with the Royal Naval Air Service, Armoured Car Aeroplane Support (R.N.V.R.), he transferred to the Army Service Corps, and it is in this corps that he is now seeing service.

MR. ARTHUR F. HOLDEN, deputy borough engineer of Coventry, has been appointed borough surveyor of Hertford, in succession to the late Mr. Jevons, out of 318 applicants. Mr. Holden was articled to Mr. W. Cecil Jackson, architect and surveyor, of Chesterfield.

THE demand for housing accommodation in the Woolwich district for munition workers continues so great that further huts, similar to those used by the troops, are to be erected for the use of single men. Already large numbers of these huts have been built near the Arsenal, and the Government garden colony of about 1,200 houses and flats built within the past year is also fully occupied. The authorities are now contemplating the erection of an additional 350 huts at other places.

GREENOCK Corporation have agreed to proceed with another extensive housing scheme. Ground has been secured in the east end, and at a special meeting last Friday it was decided to accept the tender of the West of Scotland Building Company, amounting to about £35,000, for the erection of 102 houses of the cottage type. Financial assistance is being given by the Government. A similar undertaking is at present being carried out in the centre of the town, and at the Battery Park the Admiralty are erecting huts for workmen engaged in war service.

AT the University of London the Yates Professor of Archæology, Dr. Ernest Gardner, being on active service, the course on "The Later Period of Greek Sculpture" will be given by Professor Percy Gardner, of Oxford. The course began on January 20 at two o'clock. In connection with the Department of Archæology, a public lecture will be given on February 10, at 5.30 P.M., by the Principal of King's College, Dr. R. M. Burrows, on "The Most Recent Discoveries in Crete," illustrated by lantern slides.

TRADE NOTES.

THE value of waterproofed cement has been for some time recognised by most Government departments. We hear that the Board of Public Works have been extending the G.P.O., Dublin, and that the powder Pudlo was used for making some of the cement watertight.

WE announced last month that the business of the London Cabinet Co., of Lyme Grove, Mare Street, N.E., had been purchased by Mr. H. H. Elliott, of 63 Queen Victoria Street, London, E.C. Mr. W. M. Greer has been appointed by Mr. Elliott his agent both for London and the country.

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THE
Architect and Contract Reporter.
FRIDAY, JANUARY 28, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

CONTRACTS OPEN.

CHURWELL.—Jan. 31.—For the various works required in erection of three-storey warehouse, engine-house, engine-beds, gas-production plant, &c., at Millshaw Leather Works, Churwell, Yorks, for Messrs. W. L. Ingle, Ltd. Mr. T. A. Buttery, Licentiate R.I.B.A., architect and surveyor, Leeds, or at Queen Street, Morley.

CLITHEROE.—Jan. 31.—For repairing and rebuilding fence walls on the waterworks gathering ground, for the Corporation. Mr. A. R. Bleazard, borough surveyor, Clitheroe.

GUILDFORD.—Feb. 15.—For erection of a retaining wall for the support of the highway in Quarry Street, Guildford, the construction to be either in mass concrete or reinforced concrete on the Kahn system, for the Town Council. Deposit £2 2*s*. Mr. E. Young Harrison, A.M.I.C.E., borough engineer and surveyor, Guildford.

LONDON.—Feb. 7.—For concrete foundations and general building works in connection with the extension of their Power House, for the St. Pancras Borough Council. Deposit £1. Mr. C. H. F. Barrett, town clerk, Town Hall, Pancras Road, N.W.

LONDON.—Jan. 29.—For building six small lock-up shops and stores at Mare Street, Hackney. No quantities. Deposit £1 1*s*. Mr. G. P. Pratt, A.R.I.B.A., 174 High Street, Acton, W.

LONDON.—Jan. 31.—For alterations, sanitary fittings, and other works at the Southwark Military Hospital, Dulwich Grove, Dulwich, S.E., for the Southwark Guardians. Deposit £5. Mr. A. Saxon Snell, F.R.I.B.A., 9 Bentinck Street, Manchester Square, W.

MANCHESTER.—Feb. 10.—For the work and materials required in erection of a power-house at their Bradford Road station, for the Gas Committee. Deposit £1 1*s*. Mr. F. A. Price, superintendent, Gas Department, Town Hall, Manchester, or Mr. J. G. Newbigging, M.I.C.E., Rochdale Road Gasworks.

MORLEY.—Jan. 31.—For the various works required in erection of rag shaker place at Parkfield Mills, for Messrs. John Brumfitt & Son, Ltd. Mr. T. A. Buttery, Licentiate R.I.B.A., architect and surveyor, Queen Street, Morley, and 1 Basinghall Square, Leeds.

RIPON.—Jan. 31.—For erection of additions to the Spa Baths, Park Street, for the Corporation. The City Surveyor, Town Hall, Ripon.

SCOTLAND.—Jan. 31.—For excavation work, banking, drainage, roadmaking, &c., to form an extension to the Western Necropolis on South Side, for the Dundee Town Council (Burial Board). The Parks and Cemeteries Office, 93 Commercial Street, Dundee.

SCOTLAND.—Feb. 1.—For the mason and brick, carpenter, plaster and asphalt, plumber, painter and glazier works of new parcel office, Falcon Square, Inverness Station, for the Highland Railway Co. Mr. A. Newlands, the company's engineer-in-chief, Inverness.

SCOTLAND.—Feb. 4.—For the foundation work and internal plumber work of a Domestic Science building, to be erected for the Dumfries Burgh School Board at George Street School. Mr. J. M'Lintock Bowie, F.R.I.B.A., 53 Buccleuch Street, Dumfries.

THRUSSINGTON.—Feb. 4.—For the partial demolition of the existing two brick arches, each about 22 ft. span, and the rebuilding of same in ferro-concrete and for the road-making incidental thereto at Thrussington Bridge, for the Leicestershire County Council. Deposit £1 1*s*. Mr. S. Perkins Pick, county engineer, 6 Millstone Lane, Leicester.

WALES.—Jan. 29.—For the construction of engine and filter houses, together with foundations, at Aberavon. The Borough Surveyor's Office, Aberavon.

WALES.—Jan. 29.—For the conversion of Drymma House, Skewen, near Neath, into a home for feeble-minded persons, for the Glamorganshire Joint Poor-Law Establishment Committee. Mr. T. Roderick, architect, Ashbrook House, Aberdare.

WALES.—Feb. 1.—For erection of a brick chimney shaft at Fane Valley Creamery, Altnamackin, Castleblaney. Mr. J. M'Neill, manager, the Creamery.

WALES.—Feb. 2.—For erection and construction of alterations and additions at the Cardiff Sanatorium, Canton, Cardiff, for the Cardiff City Council. The City Engineer's Offices, City Hall, Cardiff.

WHITLOCKSWORTHY.—Jan. 31.—For repairs and alterations to farm buildings at Whitlocksworthy, S. Milton, near Kingsbridge. Messrs. Bourne & Sons, land agents, Totnes.

WOODMANSTERNE.—Jan. 29.—For fitting up new lavatories and w.c.'s and works of drainage, new boiler and gas fittings, and minor repairs, to adapt The Oaks at Woodmansterne for occupation, for the Surrey Joint Poor-Law Committee. Deposit 10*s*. Mr. R. M. Chart, F.S.I., Union Bank Chambers, Croydon.

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TENDERS.

BEXHILL.

For the erection of an observation pavilion at the new isolation hospital, for the Town Council.

SHANNON (*accepted*)	£757	0	0

LONDON.

For the following works, for the St. Pancras Borough Council.

Steel Construction Work at Power-house.

Westwood & Wright	£8,527	0	0
L. Cooper	8,210	0	0
Foster Construction Co.	8,118	17	3
E. Wood & Co.	7,995	0	0
Butterley Co.	7,951	1	6
E. C. & J. Keay (*recommended*)	7,615	0	0

Concrete Coal Bunker and Lift Well.

Somerville & Co.	£3,475	14	8
Higgs & Hill	3,119	0	0
Concrete Piling Co.	2,989	0	0
W. King & Son (*recommended*)	2,764	0	0

Coal and Ash-handling Plant.

Strachan & Henshaw (*recommended*)	£3,660	0	0

For painting work at the Star Lane School, Fulham, for the London County Council.

Bovis, Ltd.	£1,125	0	0
McCormick & Sons	1,082	0	0
Maxwell Bros.	938	0	0
J. & C. Bowyer	915	0	0
Garrett & Son	829	0	0
Smith & Son	790	0	0
W. E. Blake, Ltd.	680	0	0
Inns	669	6	9
TRIGGS & Co., 92 The Chase, Clapham (*accepted*)	632	0	0

For additions and alterations and for utilising exhaust steam to the present heating installation at New Scotland Yard, S.W., for the Receiver for the Metropolitan Police District. Mr. J. DIXON BUTLER, F.R.I.B.A., New Scotland Yard, S.W.

J. Slater & Co., Ltd.	£1,150	0	0
Benham & Sons	1,066	0	0
Crittall	645	0	0
Ashwell & Nesbit	623	0	0
ROSSER & RUSSELL Hammersmith, W. (*accepted*)	593	0	0

THE NATIONAL FEDERATION OF BUILDING TRADES EMPLOYERS.

THE annual meeting of the above important body took place on Wednesday last, the 26th inst., at the Holborn Restaurant, London, W.C. Mr. A. W. Sinclair, of Scarborough, president, occupied the chair. Our report of the proceedings must, owing to lack of space, be held over until next week.

According to the thirty-eighth annual report, the Federation comprises the same County Federations as last year, but further increases have taken place in the membership—Northern Counties' Federation, North-Western Federation, Yorkshire Federation, Midland Federation, London Federation, Southern Counties' Federation, Eastern Counties' Federation, South-Western Counties' Federation, South Wales Federation, Belfast Association, Dublin Association, Colonial Members, the South African Federation, Honorary Members, the Scottish Federation. The total number of local associations affiliated is upwards of 182, with an aggregate membership of about 6,700.

State of Trade.—The present state of the building trade may be fairly described as quiet, with a tendency to further restrictions, although there is not much unemployment owing to the prevailing war conditions. It is becoming increasingly evident that there will be a shortage of labour in our trade whenever a revival takes place. That there is a continued restriction of house-building is also evident, and can only mean that eventually the already acknowledged shortage of housing accommodation will have to be made up. It would appear, therefore, that a revival of building on a big scale may be expected at no distant date, and it behoves us to be ready with both men and material to handle it.

The question of providing for an adequate supply of labour again engaged the attention of the Administrative Committee at its November meeting.

The Council heartily commends the action of the Administrative Committee, and again urges the importance of federations, associations, and individual firms giving the question of apprenticeship training their serious attention.

Boards of Conciliation.—The National Board has sat five times and dealt with two appeals, giving a decision in one case but no decision in the other.

During the year the following bodies have been admitted to the Conciliation Scheme: The London Master Builders' Association, the London branch of the Amalgamated Society of Carpenters and Joiners, the London branch of the General Union of Carpenters and Joiners, the United Builders' Labourers' Union, the Electrical Trades Union, and the Operative Bricklayers' Society.

The following further applications have been recommended by the Board for acceptance: The Navvies, Builders' Labourers, and General Labourers' Union; the Amalgamated Slaters' and Tilers' Provident Society, the National Union of Gas Workers and General Labourers of Great Britain and Ireland, the United Order of General Labourers of London, and the National Federation of Slate Merchants, Slaters, and Tilers.

The work which the Board undertook in connection with the proposed National Demarcation Scheme has been so far successful that the scheme was launched on December 14.

It has received the adhesion of eighteen out of the twenty-two national bodies which were brought to conference on the proposal, and the failure to adhere of those outstanding is understood to be due to special difficulties of a transitory character, and not to any want of sympathy with the scheme.

The rules have been adopted, and the various parties are now invited to elect the local, centre, and national committees, and to hold their annual meetings in February and March, as required by the rules, after which the scheme will be in full working order, it is believed.

The National Joint Committee of Appeal has held one meeting and dealt with six appeals, giving decisions in five cases; in one case no decision was reached.

The following summary gives an indication of the work of the Centre Boards of Conciliation:—

The Northern Centre dealt with 25 cases during the year, which were disposed of as follows:—Settled by the Board, 19; referred to higher Board, 4; ruled out of order, 1; referred back, 1.

The Midland Centre Board dealt with one case:—Settled by the Board, 1.

The S.E. Centre Board has dealt with two cases:—Settled by the Board, 0; referred to higher Board, 1; referred back, 1.

The S.W. Centre Board has not reported.

National Reserve Fund.—Continues to progress; particulars being given in the financial statement.

War Loan Stock to the amount of £1,000 has been taken up on this account.

Meetings.—During the year forty-two meetings have been held:—General meetings, 2; Council meetings, 2; Administrative Committee Meetings, 3; various Sub-Committee meetings, 13; Conciliation Boards, 5; National Joint Committee of Appeal, 1; conferences and deputations, 11; Demarcation Scheme, 5.

Wages and Hours of Labour.—The comparative statement of wages and hours of labour is no longer published, but the secretary keeps a card record of such changes as are reported to him, and will be pleased to answer specific inquiries.

Forms of Contract and Sub-Contract.—There are no

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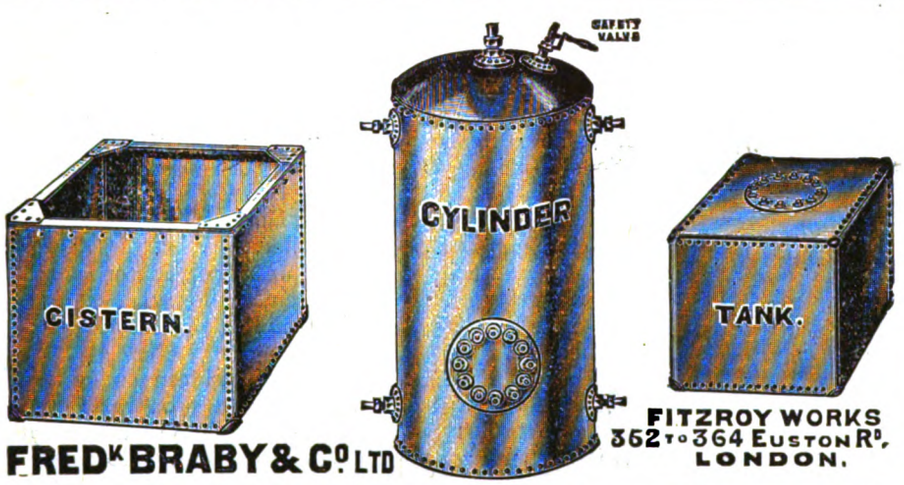
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fresh developments to record since last report, except that negotiations for a form of sub-contract for use with sub-contractors employed directly by the sole contractors have been resumed.

Subscription.—The annual budget was submitted to the autumn meeting of the Administrative Committee, which decided to recommend that the subscription for 1916 remain unaltered.

Publicity.—The present circumstances have checked somewhat the flow of articles of special interest to the building trade; nevertheless the technical papers are making every effort to elucidate such questions as present themselves.

Other Questions may be mentioned which have been dealt with and already reported upon in the "N-F-Record" during the year, relating to H.M. Office of Works and Daywork Charges for Apprentices; Proposed Board of Industry; Branch Trade Committees; Municipal Trading; the Apprenticeship Question, including a long report on suggestions for its solution; Damage to Roads by Extraordinary Traffic; Priced Schedules with Tenders; Damage to Property by the King's Enemies; Contract Conditions with Local Authorities, including long Report thereon; Demands for advances on Wages as War Bonus; Co-operative Societies; Building Bye-laws and Court of Appeal; Financial Inducements to Workmen; Excess War Profits; Preferential Prices with Paint Manufacturers; Wallpaper Discounts; Female Labour in Woodworking Industries; Pre-war Contracts.

Belgian Builders' Relief Fund.—A full report of this fund appeared in the December issue of the "N-F-Record." The figures there given were down to end of October; further amounts to hand to December 31 are as follows:—From branches of the Federation £283 17*s.*, from the Federated Employers' Insurance Association, Ltd., £20, and from Wm. Shepherd, Esq. (London), £25—making the total, including bank interest, £1,948 16*s.* 8*d.*, as shown in accounts. It is only necessary to remind the members that the contributions required each month to enable the fund to be continued in accordance with the resolution of the Executive Committee are wanted promptly, as there is no reserve to fall back upon.

Several of the Federations have allocated their quota to their members at so much per week per member; in this way in a large federation the amount works out at 1*d.* per week per member; in a medium-sized federation it is 6*d.* per month per member. This is the fairest way of apportioning the quota, and should not press hardly upon any one, while it enables the National Federation to continue a good work which is really needed and much appreciated. Meanwhile, every effort is being made to reduce the demands upon the fund by finding employment in munition work for those recipients who are capable of it; but when all is done in that way that can be done, there will remain a majority who will still have to depend upon the kind-heartedness of their English confrères for the means wherewithal to keep them until they can return to their homes.

In a letter wishing the compliments of the New Year to the President and members of this Federation, Mr. Van Ophem, the General Director of the International Federation of Building and Public Works Contractors, desires at the same time to convey to the members his profound gratitude for the so helpful assistance given by the Federation to his unfortunate compatriots. Among the numerous acts of fine and noble solidarity which have manifested themselves in England, that of this Federation will be specially appreciated, and will secure for it the gratitude and profound sympathy of the Belgian Building and Public Works Industry.

The Apprenticeship Question.—The Sub-Committee appointed to deal further with this question is considering the proposals which have been drawn up by the Institute of Builders. Meanwhile, it is reported from the North-Western Federation that a special and influential Sub-Committee has this question in hand, and is beginning operations by ascertaining the number of apprentices employed in each district, and the number which might be employed under the local working rule agreements; the question of revising apprentice wages, to bring them more into line with the wages paid to boys in other occupations in the various localities, is being taken in hand. An effort is being made to induce employers to interest themselves more in the education and general welfare of their apprentices and in providing them with suitable tools. A desire is expressed that the National Federation should take steps to induce the Government to establish Trade Continuation Schools, at which scholars should be compelled to attend.

The last-named suggestion involves legislation of so contentious a kind as to be impossible until after the war; to carry it out when the time comes will involve a large increase in the cost to the State of Education, so that it is evident that it will have to await the favourable moment when money is available and Parliament willing to carry out so far-reaching a reform.

The Munitions of War Amendment Act.—Following on the representations which were made to the Government by representatives of this Federation and others, there has been an extension of the provisions contained in Section 7 of the principal Act to the construction, alteration, or repair of works of construction and buildings for naval and military purposes, of buildings in which munition work is, or is intended to be, carried on, the erection of machinery and plant therein, and the erection of houses for the accommodation of persons engaged or about to be engaged on munition work.

It follows that no firm will be able to take away labour from such work if the establishment is covered by the Order of the Minister made under Section 7 of the principal Act.

Pre-War Contracts.—Complaint is being made as to the lack of equitable consideration shown to contractors by certain of their clients now that contracts, taken prior to the war, are finishing, or being settled up. When war broke out the position in which contractors were thereby placed was brought to the notice of both the Board of Trade and the Treasury. Although it did not seem practicable to cancel existing contracts, because of what had happened, contractors were led to believe that clients in general would give equitable consideration to the question of losses on contracts sustained in consequence of the war, by contractors who had faithfully carried out their undertakings. In some cases promises to that effect were given.

Judging by the reports and complaints received these expectations are not being realised. Apparently consideration must be shown by contractors to their workmen in the shape of war bonuses because of the abnormal cost of living due to the war. But no consideration is to be shown by the building owner for the contractor, who is doubly penalised by having to pay war bonuses (for which no return in extra output is received) and by having to pay extra for materials (mainly because of the extraordinary naval and military requirements of the Government), notwithstanding the fact that the building owner gets the entire benefits of the contract just as though no war existed. Why should the latter not bear a share of the extra cost of his work due to this extraordinary war? In common fairness he ought unquestionably to do so, and it is only a reasonable expectation on the part of contractors that Government will see that their case is given the same equitable and effective consideration that has been given to other equitable claims, such as, for example, damage by King's enemies in the shape of destruction of property by bombardment of coast towns. Indirectly, contractors are suffering damage because the King's enemies, by making war on a huge scale, have caused contractors to incur serious losses in carrying out their contractual obligations on contracts taken prior to the war.

Consideration is being shown to mortgagors, to tenants, to workmen, to property owners, and in some

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cases emergency legislation passed for their relief, and why not to contractors where reasonable grounds can be adduced?

Damage to Roads by Heavy Motors.—The Administrative Committee appointed the Treasurer of the Federation (Mr. Willcock) to give evidence before the Departmental Committee which has under consideration the law and regulations relating to the construction and use of road locomotives and heavy motor-cars in Great Britain, with a view to the issue of a report as to what amendments, if any, are desirable. On behalf of this Federation a statement was put in wherein it was pointed out that the Federation is interested, both directly and indirectly, in the inquiry, because its members are in the habit of using road locomotives and heavy motor vehicles for the transport of materials, and because they are subjected to claims under the Highways and Locomotives Acts for damage to roads alleged to be due to their excessive traffic.

In view of the anomaly which would result from a partial dealing with this question, it was submitted that the recommendations of the Committee should include such an amendment of the provisions in the said Acts relating to this question as will bring a contractor's other transport vehicles into a parallel position to that of his heavy motor vehicles, so that the present uncertainty as to whether any claim will be made and as to what its amount may be will give place to such a definite and equitable apportionment of liability as will enable him to estimate with reasonable certainty whether he has anything to pay, and how much, prior to taking on a contract.

The general statement was accompanied by a summary of actual cases reported from various parts of the country and attention called to the capricious and costly way in which contractors are penalised under the law as it now stands.

Reserved Occupations.—Members will have seen a list of occupations in which the workmen employed are exempted, wholly or mainly, from military service. The principle which has been adopted is not to deal with the question by industries, but by occupations, so that it may be necessary to search the lists to find out whether any particular class of workmen in a particular industry is exempt.

As there are certain classes of men employed on the staffs of building firms which do not appear to have been so far included in those lists, a communication was made to the Reserved Occupations Committee calling attention to the difficulty of replacing such men as estimators, general managers, managing partners, works managers, job foremen or general foremen, and foremen machinists, or leading machine hands, on account of the special training as experts in their respective occupations, and pointing out that men of that type are indispensable to building contractors.

A request was made that such classes of men should be scheduled, not necessarily for entire exemption but for exemption upon their employer's request.

The Board of Trade replied that the Committee is unable to recommend the extension of the list of reserved occupations to include the classes referred to, but under Section II. of the Instructions to Local Tribunals opportunity is given for appeal to the local tribunal on the ground that such men are individually indispensable.

Organisation.—Some organisation work has been done, despite the war.

The North-Western Federation reports that the scheme of organisation begun some years ago has been practically completed by the adhesion during 1915 of local associations formed for Penrith, Lymm, Keswick, and Cockermouth, Morecambe, and West Cumberland, making a total of 70 local associations now affiliated to that County Federation as against 27 in May, 1911. The North-Western Federation is to be heartily congratulated upon the results of its remarkable and well-sustained effort, and it is to be hoped other County Federations will do likewise.

The Yorkshire Federation reports having received the adhesion of local associations at Pudsey and Holmfirth during the year.

London reports that progress has been made in the matter of organisation, and its rules have been revised in order to stimulate its activities.

Dublin reports an increase of membership on the year; regulations have been adopted requiring members to notify all tenders of £100 and upwards; that work in competition must not be tendered for unless quantities are supplied if its value will exceed £500; that the Day Work Schedule of Prices must be adhered to; that the special war clause must be insisted upon in all contracts exceeding £300, and other minor matters; also that members must insist on conditions of contract as agreed between the Institute of Architects in Ireland and the Association where a member of the Institute offers a contract to a builder.

The Scottish Federation reports that after two years' negotiations it is about to secure universal conditions of contract for the building trade in Scotland. A new mode of measurement for carpenter and joiner work has been established, and the mason mode is now practically settled. Also that its organisation has been much strengthened, and some measure of control of the trade is now resulting.

Relations with the Operatives.—Normal relations continue with the operatives, which is satisfactory, considering the difficulties raised in certain districts by the demand for munition workers. The continued adhesion of fresh bodies to the Conciliation Scheme and the formation of a representative scheme for dealing with Demarcation Disputes is a good augury for the future.

During the year advances of wages or war bonuses have been conceded to various branches of the operatives in the following districts: Dublin, Chester, Belfast, Sunderland, Newcastle-on-Tyne, N. Shields, S. Shields, Blyth, Stockton-on-Tees, Middlesbrough, Hartlepools, Darlington, Birmingham, Bromsgrove, Derby, Northampton, Worcester, Norwich, Manchester, Bradford, Barnsley, Macclesfield, Halifax, Colne Valley, Huddersfield, Scarborough, York, Spen Valley, Blackburn, Bolton, Preston, Rochdale, Southport, Rossendale, Coventry, Leamington, Leicester, Bristol, Exeter, Aberdare, East Glamorgan and Monmouthshire Valleys, Newport (Mon.), Pontypridd, Cardiff, Wakefield, Hull, Scunthorpe, Dewsbury, Keighley, Leeds, Sheffield, Barnoldswick, Batley, Castleford, Pudsey, Mirfield, Bangor, Leigh Atherton and Tyldesley, Heywood, Llandudno, Glossop, Chorley, Altrincham, Blackpool, Burnley, Longridge, Maryport, Oldham, Warrington, Fleetwood, Widnes, Runcorn, Ashton-under-Lyne, Northwich, Basingstoke, Barrow-in-Furness and West Bromwich.

There are a number of notices for advances under consideration.

MR. ALBERT E. PRIDMORE, F.S.I., 2 Broad Street Buildings, has been elected the rating surveyor to the City of London Licensed Victuallers and Restaurant Proprietors' Trade Protection Society.

THE Architectural Association of Ireland held a meeting on the 20th inst., at 15 South Frederick Lane, Dublin, the President, Mr. H. G. Leask, in the chair. Mr. Harry Allberry, A.R.I.B.A., read a paper on "Belgium: Her Glory and Woe." He referred at considerable length to the architectural glories of Belgium, as exhibited in her larger towns and cities, before the ruthless invasion of the Germans. He showed on the screen a large number of pictures of the beautiful buildings that have been damaged or destroyed, and traced the march of the German army from Liège through Brussels to Antwerp, the occupation of Louvain, Ghent, Bruges, Malines, Courtrai, Dinant, until its progress was barred by the line of Belgian, British, and French bayonets in and around Ypres. He described most of the best-known ecclesiastical and civil buildings in the country. A number of lantern slides were shown, illustrating the destruction wrought by the enemy. On the motion of Mr. R. O'Brien Smith, seconded by Mr. G. G. Lynes, a vote of thanks was given to the lecturer.

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THE

Architect and Contract Reporter.

FRIDAY, FEBRUARY 4, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

CONTRACTS OPEN.

BAILIFFE BRIDGE.—Feb. 7.—For the works required in erection of confectionery works, including chimney and boiler-house, at Bradford Road, Bailiffe Bridge, near Brighouse. Send names not later than Feb. 7 to Mr. W. W. Longbottom, Licentiate R.I.B.A., Somerset Chambers, George Street, Halifax.

GUILDFORD.—Feb. 15.—For erection of a retaining wall for the support of the highway in Quarry Street, Guildford, the construction to be either in mass concrete or reinforced concrete on the Kahn system, for the Town Council. Deposit £2 2*s*. Mr. E. Young Harrison, A.M.I.C.E., borough engineer and surveyor, Guildford.

HULL.—Feb. 15.—For the reconstruction of No. 10 warehouse at Hull, for the North-Eastern Railway. Mr. A. Pollard, the company's architect, York, and the Station Master's Office, Paragon Station, Hull.

IRELAND.—Feb. 9.—For building twelve labourers' cottages at St. Lawrence, Chapelizod, for the South Dublin Rural District Council. Mr. T. J. Byrne, clerk, Council Offices, 1 James's Street, Dublin.

IRELAND.—Feb. 22.—For erection of a goods shed, for the Belfast Harbour Commissioners. Mr. T. S. Gilbert, M.I.C.E., harbour engineer, Harbour Office, Belfast.

LONDON.—Feb. 7.—For concrete foundations and general building works in connection with the extension of their Power House, for the St. Pancras Borough Council. Deposit £1. Mr. C. H. F. Barrett, town clerk, Town Hall, Pancras Road, N.W.

MANCHESTER.—Feb. 10.—For the work and materials required in erection of a power-house at their Bradford Road station, for the Gas Committee. Deposit £1 1*s*. Mr. F. A. Price, superintendent, Gas Department, Town Hall, Manchester, or Mr. J. G. Newbigging, M.I.C.E., Rochdale Road Gasworks.

NEWCASTLE-ON-TYNE.—Feb. 17.—For the erection of works and repairs to buildings in their charge in the Newcastle-on-Tyne district during one year from April 1, for the Commissioners of H.M. Works and Public Buildings. Deposit £1. H.M. Office of Works, &c., Storey's Gate, S.W.

NORMANTON COMMON.—For alterations to branch store, Normanton Common, for the Castleford Co-operative Industrial Society, Ltd.: (Contract No. 1) general alterations; (2) joiner's work and shop fittings. Messrs. Garside & Pennington, architects and surveyors, Pontefract and Castleford.

OAKDALE.—Feb. 23.—For erection of a workmen's institute at Oakdale Village, for the Oakdale Institute Committee. Deposit £2 2*s*. Mr. A. F. Webb, M.S.A., architect and surveyor, Blackwood, Mon.

PEGSWOOD.—Feb. 15.—For the reconstruction of Pegswood Station, for the North-Eastern Railway. Mr. A. Pollard, the company's architect, Irving House, Westgate Road, Newcastle-on-Tyne.

SCOTLAND.—Feb. 5.—For joiner work required at their properties, Nos. 16 and 18 Nichol Street, for the Kirkcaldy Town Council. The Burgh Surveyor, Kirkcaldy.

SHEERNESS.—Feb. 12.—For erection of five houses in Coronation Road, Sheerness. Messrs. Twigg, Lifton & Co., 63 High Street, Mile Town, Sheerness.

WALES.—For completion of a house and shop at Pontyberem. Messrs. W. Griffiths, F.S.I., & Son, Falcon Chambers, Llanelly.

WALES.—Feb. 12.—For erection of a schoolroom, &c., at "Siloh" Welsh Congregational Chapel, Trecynon, Aberdare, for the Trustees. Mr. T. Roderick, architect, Ashbrook House, Aberdare.

THE Newport (Mon.) Works Committee has passed plans for new tube works on the east side of the river on a part of the site of the British Mannesmann Tube Company's proposed premises.

THE Basingstoke Town Council at their last meeting considered correspondence from the Local Government Board and Messrs. Thornycroft & Co., with reference to the urgent suggestion of the latter—some months ago—that the council should at once proceed with a housing scheme. The Local Government Board were willing to sanction a loan for fifty houses provided Messrs. Thornycroft were prepared to render "adequate financial assistance." Messrs. Thornycroft offered £2,500 provided the fifty houses were built near their works, and that they had the first call on them. But as the council could not promise any houses in less than six months the firm wrote that they found local builders could provide them in three months, and therefore negotiations must be broken off.

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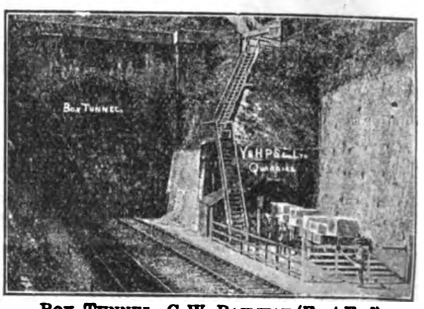
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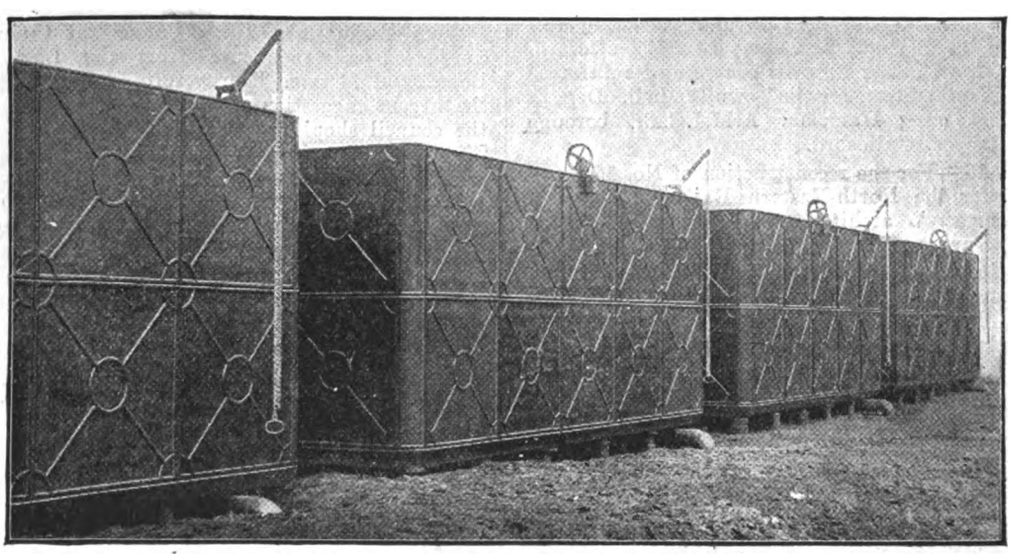

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TENDERS.

BARKING.

For the provision and erection of a steel-framed building covered with corrugated iron, together with brick-lined engine well and appurtenant works, at the electricity generating station, for the Urban District Council. Mr. R. A. LAY, A.M.I.C.E., acting surveyor, Barking.

Sanders & Forster	£2,498	0	0
Peirson & Co.	1,755	0	0
Moss (withdrawn)	1,645	0	0
Foster Construction Company	1,625	0	0
F. MITCHELL & Co., Manchester (*accepted*)	1,565	0	0
Potterton (withdrawn)	1,527	0	0
Surveyor's estimate	1,609	0	0

DUDLEY.

For the erection of houses and construction of streets and sewers in connection with the municipal housing scheme, for the Corporation.

Accepted tenders.

H. H. Crump, Birmingham, for erection of 124 houses	£31,000	0	0
Dudley Amalgamated Builders, Dudley, ninety houses	26,250	0	0
Rogers & Son, Cardiff, eighty-six houses	22,500	0	0

For the construction of new roads and sewers on the Brewery Fields estate, and for the widening of Bunn's Lane and St. John's Road.

LEWIS & TAPLIN, Birmingham (*accepted*)	£6,667	0	0

For construction of new sewers in St. John's Road and Bunn's Lane.

LEWIS & TAPLIN, Birmingham (*accepted*)	£460	0	0

IRELAND.

For the erection of a pavilion, construction of water supply and sewage works and sundry works to administration block of County Sligo Sanatorium at Cloonamahon House, near Collooney, for the Sligo County Council.

Kennan & Sons	£3,039	0	0
Mullen	2,997	0	0
McNally	2,841	0	0
Galloway & Son	2,252	0	0
Connolly	2,195	0	0
W. J. COOTE, Longford (*recommended*)	2,100	0	0

WEYMOUTH.

For the erection of boundary wall between Sunnybank estate and houses, Salisbury and Granville Road, for the Corporation. Mr. K. S. S. HARRIS, borough engineer.

Conway	£287	0	0
Pattinson	283	14	6
Parsons	275	0	0
A. E. WHETTAM, Weymouth (*accepted*)	265	0	0

NATIONAL FEDERATION OF BUILDING TRADE EMPLOYERS.

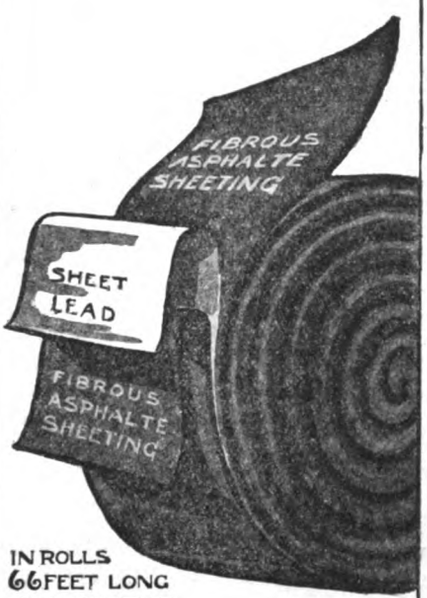
IN our issue of last week we gave a synopsis of the annual report of the above body, which was presented at the annual meeting on Wednesday, January 26.

Mr. A. W. Sinclair, of Scarborough, President, in introducing the thirty-eighth annual report, pointed out that the proceedings of the Federation during the year had been somewhat restricted. But he was glad to say that such restriction had not affected its practical working—for matters of importance dealt with had not been fewer, but only social affairs had gone by the board. The Boards of Conciliation were extending the scope of their activities, and it is recognised that if no other work has been done by the Federation, splendid results would have been achieved by the formation of these Conciliation Boards. The trade had secured extraordinary peace. The men recognise that instead of devastating strikes they are now able by peaceful means to get what is right and fair. A body on similar lines has been formed to deal with demarcation matters. Eighteen societies out of twenty-two had given their adhesion to the scheme. There were certain things in the forms of contract which the Federation and the R.I.B.A. desire to alter. The former have found it possible to arrange them satisfactorily. The Lancashire members had rendered this somewhat difficult, but it was hoped to combine their requirements with the rest, *i.e.*, to have one national agreement for the whole of the kingdom. Sub-contractors have for years been asking for a greater security as to receiving payment. The builders also desire to be secured from any trouble from sub-contractors. The Federation found out that if it were possible to devise a form of sub-contract which would not increase their obligations, the R.I.B.A. would consider the matter. It is hoped that such form may be ready for presentation before long to the R.I.B.A. On of the most pressing needs facing the trade is the supply of labour. Many of the large towns have not been getting apprentices; there was no more important question than that of apprenticeship. Pre-war contracts had affected numerous builders. While the Government has in many cases afforded protection to various branches of trade in this respect, the building trade has received none. A committee of the Federation are endeavouring to secure that justice should be done to builders also. The law concerning damage to roads by heavy motors is admittedly in a very unsatisfactory state, and should be so altered that the contractor about to use a road may know his liabilities. Finally he would like to mention that the Federation had lost one of its most prominent members in Mr. MacFarlane, who was an ex-President.

The report of the Employers' Parliamentary Council was submitted to the meeting by Mr. William Shepherd (London), who, with Mr. Sinclair, represents the Federation on it. In doing so he pointed out that the Council had been during the past year in the position of a barrister in a court of law who has a watching brief. In any case where the interests of the employers in the various industries were menaced, the Council were prepared to act. But to attempt to intervene in legislation would have been waste of energy, because it would have been said that the employers were oblivious to the welfare of the country in war time. The Government, in giving effect to the measures necessary to meet the exigencies of this war have been brought face to face with the trouble which has beset employers for the past twenty-five years. In consequence of the encouragement bestowed in the past upon labour interests in all industrial matters, the measures of the Government proved ineffective. Soon after the Munitions Act was passed there was a threat of a national strike and it became impossible to enforce what it had been intended to enforce. There is, of course, a great deal of speculation as to what will be the condition of this country when the war is concluded—unhappily that time is not very clear and distinct. In the opinion of the speaker the war was nothing like concluded. The issue was so remote that he had not the remotest views concerning it. The remedy was very difficult to conceive. He thought it might be assumed that the difficulties which the Government have been having in its relations to Labour will make them more sympathetic in the future to the troubles of employers. He did not wish his own attitude to be misunderstood. Antagonism towards trade unionism seemed absurd to anyone gifted with reason. But trade unionism must be restrained so as not to encroach upon the prerogatives of other people. The employer should not be handed over, bound hand and foot, to the other section of the community. So far as the London Association is concerned they had never entertained the idea that the trade unionists were the only parties to be considered. There may be a latent feeling that a man has the right to differ, and not be outlawed in consequence. They might congratulate themselves upon the circumstances of the war having suspended the activities of those people who have an axe to grind without a stone to grind it upon. There has been no room for Private Bills. With regard to his report it must be borne in mind that the Employers' Parliamentary Council did not act exclusively for the benefit of the building trade.

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Mr. Foster, in commenting on their subscription to the Employers' Parliamentary Council of £88 per year, said he began to wonder what the Federation was getting for the money. In any and every dispute the operatives have a policy already decided upon. One would have thought that the Employers' Parliamentary Committee would have given some indication of having a policy under consideration. The report to his mind was remarkable for its omission to deal with various matters, such as are now under the consideration of Chambers of Commerce. We hear a great deal of the slacking of the working-man, but the real crux is the gross mismanagement of the Government representatives.

Mr. Sinclair remarked that the men's representatives were whole-time paid officials, whereas the members of the Employers' Parliamentary Council did their work at their own expense and out of their own time. On the subject of the Derby scheme, he mentioned the authorities had absolutely declined to put builders under the list of reserved occupations, but reply that local tribunals will be able to deal with the various cases as they arise. It was absolutely necessary that certain irreplaceable men should be exempted from military service, if the trade was to continue.

The adoption of the accounts and balance sheet and auditors' report was proposed by Mr. H. Willcock (Wolverhampton), honorary treasurer, and seconded by Councillor S. Easten Newcastle-on-Tyne), honorary auditor. The latter said that there seemed nothing in the finances to grumble at considering the abnormal conditions.

In presenting the report of the Belgian Fund, it was mentioned that a deputation from the Federation to the Government Departments concerned had made vigorous efforts to induce the Government to find work for suitable Belgian refugees, but there were considerable difficulties in the way. Councillor S. Easten has just arranged to build a hundred houses for munition workers near Newcastle-on-Tyne at a fixed price per house, and will employ as many Belgians as can be arranged for so long as they work satisfactorily.

M. Volckerick, legal adviser of the Antwerp Federation, expressed his warm thanks for the generous sympathy shown to his fellow-members by the English body.

Mr. W. Thomas (Cardiff) appealed for continued help for the Belgian Fund. There was only sufficient funds in hand to last until the end of February. It would be a godsend if enough money were obtained to last three more months.

Mr. E. J. Brown (London) initiated a long discussion on the subject of Pre-war Contracts. He said he hoped the National Federation would do whatever was possible, and as soon as possible, with the Government representatives to obtain redress for the unfortunate employer who had obtained pre-war contracts. Owing to this war there were a large number of members of the London Federation at least who were hit very hard indeed. The evidence was that in most of these cases the employer had tried in vain to get something extra towards his loss. He himself could not understand why the case did not come under the War Emergency Act. The Government practically commandeer labour, and the prices of goods have advanced anything from 15 to 50 or 65 per cent., but there is nothing to allow of the builder recouping himself. This great injustice should be looked into. If the Government can see it is the proper thing to pay any war bonuses, they should in every way necessary meet the extra cost of building put up by the war. In the Government's own building operations there have been frightful waste of material and labour. Yet there has been the most flagrant refusals to put work out to tender, and so allow hundreds of contractors to do it for a fair profit.

Mr. N. R. Stirling (Liverpool) remarked that the North-West Federation had this question under consideration twelve months ago. They had passed resolutions asking that it should be dealt with by the Employers' Parliamentary Council. He thought that the Executive Committee of this National Federation of Building Trade Employers should take this matter in hand and see if they cannot get their members some repayment.

Mr. Dove (London) thought they had a very decent chance of getting their case dealt with by the Government. Of course, the Government had already gone a little way to meet certain contractors. The people the builders were up against are the local authorities, who were told by the Government that they must shut down local work.

After a protracted discussion, the following resolution was adopted: "That the officers of the Federation be requested to consider the question of pre-war contracts at a very early moment, to collect such evidence as possible from members of the Federation, and to take steps to place the whole matter before the Government, so that contractors may be recompensed for losses incurred through war causes upon contracts entered into with the Government or public authorities prior to the declaration of war."

Various matters were dealt with at the adjourned session in the afternoon.

In connection with the now existing National Scheme of Conciliation, the meeting acceded to applications made for affiliation by the Navvies, Builders Labourers' and General Labourers' Union; Amalgamated Slaters' and Tilers' Provident Society; National Union of Gas Workers and General Labourers of Great Britain and Ireland; United Order of General Labourers of London; National Federation of Slate Merchants, Slaters and Tilers; National Union of Operative Heating and Domestic Engineers.

The President explained that the sub-committee entrusted with the question of apprenticeship still had it under consideration, and hoped to be able to recommend something which would be of benefit to the trade.

Mr. Renshaw called attention to the scheme of the Institute of Builders which had been sent for publication in the trade Press ("Architect," January 21), and expressed the hope that the members of the Federation would consider it.

The following motion was carried:—

"That it be an instruction to the Administrative Committee to consider proposals from associations which have for their object the combining of the Federations and trade organisations of this country and the Empire, with a view to protecting, consolidating, and extending the trade of the Empire, and particularly with a view of advising the respective Governments on all matters affecting trading relations, and the welfare of the people; and, if satisfied with the proposals of any, to give their tentative support pending a report to the Council in July next; and that the President and Secretary collect all necessary information for the Administrative Committee."

Mr. W. F. Wallis, J.P. (Maidstone), was elected as President.

BUILDING TRADE IN EDINBURGH AND GLASGOW.

THE forty-fourth annual general meeting of the Edinburgh, Leith, and District Building Trades Association was held on January 31 at 123 George Street, Edinburgh. Mr. Edward Bruce (president) presiding. The annual report stated that of all industries the building trade had probably been more adversely affected by the war than any other. In Edinburgh and district the normal approximate value of building warrants passing through the Dean of Guild Court was between £600,000 and £700,000. For the year 1915 the figure was £140,000. The demand for war expenditure, the high rate of wages, the restrictions of the Rents Act, and the high costs of production and freight all made for general depression. There was, however, a very widespread necessity for further building accommodation, which was only restrained by the

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necessities of the war, and with the cessation of hostilities a rapid revival might be confidently expected in the building trade. The report was unanimously adopted. Relations with the operatives and labourers had been satisfactory. A report was submitted of the negotiations for the establishment of universal conditions of contract and the mode of measurement for carpenter and joiner work. These had now been issued, and had given general satisfaction to contractors. Regret, however, was expressed that the arrangement which had been arrived at through Sir George Askwith with the Faculty of Surveyors on October 22 last, for the purpose of ensuring the issue of schedules conform to the mode, had not so far proved effective. It was incumbent upon every member to support the enforcement of the application of the terms of the mode. The report of the committee dealing with the mason mode had been much delayed, but it was understood a further meeting was to take place. A satisfactory balance-sheet was submitted, and a further sum of £100 was directed to be placed in War Loan stock. The office-bearers for the ensuing year were elected as follows:—President, Mr. Edward Bruce; vice-presidents, Mr. James Crowe, Mr. D. A. Angus, and Mr. Adam Currie, together with a committee of fifteen members.

The annual meeting of the Master Masons' and Brick-builders' Association of Glasgow and neighbourhood was held last week in the Building Trades Exchange, Buchanan Street, Glasgow. Mr. John Train, president, was in the chair. The committee, in their report for the year 1915, stated that trade in Glasgow and suburbs was practically at a standstill, mainly owing to the Government recommendations in the way of restraint in expenditure. It was hoped that the dull trade experienced for the past few years would be succeeded on the conclusion of the war by a revival. The number of the association, it was added, was ninety-eight, as compared with ninety-nine in the previous year.

During the year a sub-committee was instructed with regard to the adjustment of conditions of contract applicable to the building trade, and along with other bodies in Scotland negotiations were entered upon. The conditions of contract had now been fixed by Sir George Askwith, and the sub-committee had every reason to believe that the reference had resulted in the establishment of conditions of contract which would be most beneficial to the building trade. It was hoped that the negotiations for a national mode of measurement for mason work would be completed shortly. No dispute with operatives occurred during the year.

The financial statement showed a balance at credit of the association of £245, as compared with £189 at the end of 1914. The committee recommended that £150 should be invested in the purchase of 5 per Cent. Exchequer bonds.

The report and financial statement were adopted.

Mr. John Train was re-elected president, Mr. J. Scott Inglis vice-president, and Mr. William Muir treasurer.

The negotiations which had taken place during the year with a view to the adoption of a national mode of measurement were explained. A letter was submitted from Mr. A. K. Smith, one of the surveyors who has been taking part in the negotiations, stating that some points about stone measurement had to receive final adjustment with quarrymasters, and that he trusted to be in a position to call a meeting of the sub-committee representing the trade at an early date. It is expected that the mode of measurement will be completed shortly.

VARIETIES.

A LARGE oil refinery, an extension of the Olympia Oil and Cake Company's undertaking, is to be established on Barlby Bank on the East Riding side of the river at Selby. The company some time ago acquired 200 acres of land on the south of Barlby Road, and preparations have commenced for the new structure. Other extensions are expected in the district.

AT the last meeting of the Electric Lighting Committee of Edinburgh Town Council, the City Superintendent reported that plans were in progress for the new power station at Portobello, and it was remitted to him to prepare specifications for estimates for the work.

THE difficulty which arose owing to the war on the £50,000 sewerage scheme for the two Matlocks has been temporarily overcome. In accordance with the Government order the loan permit was stopped, and on the request of the Matlock Council the Local Government Board inquiry was held to hear the case for a further advance of £12,000. News has been received by the Council that the £12,000 has been granted, and the scheme will proceed.

THE Cardiff Property and Markets Committee last week decided to proceed with a scheme for installing plant at the Corporation Baths for cleansing the water by æration and filtration. The city engineer (Mr. Wm. Harpur) stated that with the reduction in the consumption of water, after allowing for upkeep and renewal of plant, a saving of £300 a year could reasonably be expected. He made the interesting statement, in order to show the efficiency of the aeration and filtration process, that on the battlefields of France and elsewhere water was actually pumped out of the trenches, cleansed, and returned to the men as drinking water in a few hours. Included in the estimate of the committee was an item of £800 for repairing the ceilings in the City Hall and Law Courts. The City Engineer said that £2,000 had already been spent on this work, and a further £200 would have to be spent, a total of £3,000. The committee considered that for safety the work must be done.

AT last week's meeting of the London County Council the Asylums Committee reported that in consequence of representations from the Finance Committee (L.C.C.) H.M. Treasury have intimated that they are not prepared to approve of the continuance of expenditure for the erection of the eleventh asylum, they have taken steps to stop work on the buildings as early as possible. This has involved negotiations as to terms with Leslie & Co., Ltd., the contractors for the building construction, and with the Brightside Foundry and Engineering Company, the contractors for the installation of a heating plant, work under both contracts being as yet unfinished. The terms which have been arranged, subject to the approval of H.M. Treasury, and to the execution of a formal agreement, are:—Building contract—Leslie & Co., Ltd.: (*a*) Contractor to be paid (i.) for all work done up to the time agreed for the temporary closing down including certain works necessary to prevent damage to the structures, (ii.) on completion of agreement, one-half (£10,000) of the retention money, (iii.) as compensation for suspension of work, the sum of £16,000 payable in two instalments, viz., £8,000 on completion of agreement and £8,000 on resumption of work. (*b*) Work to be resumed one year after declaration of peace or earlier by arrangement. Heating installation—Brightside Foundry and Engineering Company: (*a*) Contractor to be paid (i.) balance of contract value less retention money of all permanent work executed, (ii.) the contract value as estimated by the engineer of all materials delivered and stored on the site, (iii.) interest at the rate of 5 per centum per annum from January 1, 1916, until date agreed for resumption of work on the amount of retention money in committee's hands at suspension of work. (*b*) Work to be resumed one year after declaration of peace or earlier by arrangement. (*c*) Any increase or decrease of cost to the contractor of completing the work after date of resumption due to any advance or decrease of prices of materials not already obtained and rates of labour as compared with those obtaining at date of contract, to be paid to the contractor or allowed by him as the case may be.

TRADE NOTES.

BOYLE'S latest patent "air-pump" ventilators have been adopted for St. Paul's Church, Swanley Village, Kent.

SIRAPITE plaster, supplied by the Gypsum Mines, Ltd., was used for interior plastering in "Canada House," Kingsway, W.C., the big block of offices erected from the designs of Messrs. Trehearne & Norman, which we illustrated in our issue of January 21.

THE engineer for the new Ameer's Palace, now being built in Afghanistan, has used "Pudlo" for waterproofing the cement work. The makers inform us that this is only one of the many contracts abroad where their waterproofer has been successfully employed.

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THE
Architect and Contract Reporter.
FRIDAY, FEBRUARY 11, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITION OPEN.

DUBLIN.—The Senate of the National University of Ireland invites architects to submit designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2*s.* deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

DEWSBURY.—Feb. 17.—For the work required in extension of the engine-house at the Corporation electricity works, Bradford Road, for the Electricity and Tramways Committee. The Borough Surveyor's Office, Town Hall, Dewsbury.

GUILDFORD.—Feb. 15.—For erection of a retaining wall for the support of the highway in Quarry Street, Guildford, the construction to be either in mass concrete or reinforced concrete on the Kahn system, for the Town Council. Deposit £2 2*s.* Mr. E. Young Harrison, A.M.I.C.E., borough engineer and surveyor, Guildford.

HAYFIELD.—Feb. 21.—For the re-roofing of a building at the Wood Print Works, Hayfield, Derbyshire, for the Calico Printers' Association, Ltd. Deposit £1 1*s.* The Engineering Department, Calico Printers' Association, St. James's Buildings, Oxford Street, Manchester.

HOVE.—Feb. 23.—For alterations and additions to the electricity works, Davigdor Road, for the Town Council. The Borough Surveyor's Offices, Town Hall, Hove.

HUDDERSFIELD.—Feb. 16.—For works required to be executed in the erection of fifteen workmen's dwellings (in three separate blocks) on the Royds Hall estate, Paddock, for the Corporation. Contractors may tender for all trades or for each separate trade—viz., excavator, mason and bricklayer, carpenter and joiner, plumber and glazier, plasterer, slater, painter, and electrician. Mr. K. F. Campbell, M.I.C.E., borough engineer and surveyor, 1 Peel Street, Huddersfield.

HULL.—Feb. 15.—For the reconstruction of No. 10 warehouse at Hull, for the North-Eastern Railway. Mr. A. Pollard, the company's architect, York, and the Station Master's Office, Paragon Station, Hull.

HULL.—Feb. 17.—For the necessary work to be performed in the alterations and repairs to Leicester Cottage, Leicester Street, for the Corporation. Deposit £2 2*s.* Mr. J. H. Hirst, city architect, Guildhall, Hull.

IRELAND.—Feb. 22.—For erection of a goods shed, for the Belfast Harbour Commissioners. Mr. T. S. Gilbert, M.I.C.E., harbour engineer, Harbour Office, Belfast.

LANNER MOOR.—Feb. 17.—For converting shops, &c., at Lanner Moor, Cornwall, into three dwelling houses. Mr. J. Williams, Trevenson Terrace, Pool, Carn Brea, S.O.

LEEDS.—Feb. 14.—For repairs to buildings and furniture for twelve months from April 1, 1916, to March 31, 1917, in separate trades as follows: Bricklayer and mason; carpenter and joiner; plumber; slater; plasterer; smith and founder; heating engineer; concretor; painter, for the Leeds Education Committee. The Architect's Section, Education Offices, Leeds.

NEWCASTLE-ON-TYNE.—Feb. 17.—For the erection of works and repairs to buildings in their charge in the Newcastle-on-Tyne district during one year from April 1, for the Commissioners of H.M. Works and Public Buildings. Deposit £1. H.M. Office of Works, &c., Storey's Gate, S.W.

OAKDALE.—Feb. 23.—For erection of a workmen's institute at Oakdale Village, for the Oakdale Institute Committee. Deposit £2 2*s.* Mr. A. F. Webb, M.S.A., architect and surveyor, Blackwood, Mon.

PEGSWOOD.—Feb. 15.—For the reconstruction of Pegswood Station, for the North-Eastern Railway. Mr. A. Pollard, the company's architect, Irving House, Westgate Road, Newcastle-on-Tyne.

SHEERNESS.—Feb. 12.—For erection of five houses in Coronation Road, Sheerness. Messrs. Twigg, Lifton & Co., 63 High Street, Mile Town, Sheerness.

WALES.—Feb. 12.—For erection of a schoolroom, &c., at "Siloh" Welsh Congregational Chapel, Trecynon, Aberdare, for the Trustees. Mr. T. Roderick, architect, Ashbrook House, Aberdare.

WALES.—March 4.—For the "superstructure" of proposed convalescent home for men at Deganwy, North Wales, for the Manchester and Salford Hospital Saturday and Convalescent Homes Fund. Send application and £1 1*s.* deposit by Feb. 16 to Mr. H. H. Brown, F.R.I.B.A., 20 Brazennose Street, Manchester.

TENDERS.

LONDON.

For the provision of an operating-room at the South-Western Hospital, for the Metropolitan Asylums Board.

Myall Bros.	£695 0 0
Edgar	640 0 0
Simms	537 0 0
General Building Company	529 4 0
Truscott	512 12 0
Inns	511 0 0
Hussey	509 0 0
Lown & Co.	498 10 0
King & Son	498 0 0
Boyd & Son	497 0 0
E. PEDDLE, West Norwood (*accepted*)	489 0 0
Engineer-in-Chief's estimate	545 0 0

For painting work at the new West Norwood Fire Station, for the L.C.C.

Parker & Sons	£489 0 0
Akers & Co.	447 0 0
J. & C. Bowyer	407 0 0
Godson & Sons	401 0 0
Peyton	385 7 10
Scott Fenn	286 14 10
TRIGGS & Co. (*accepted*)	264 0 0

ROMSEY.

For pulling down some existing buildings and for erection of three cottages on the site, for the Corporation. The BOROUGH SURVEYOR, Romsey.

G. J. DREWITT (*accepted*)	£650 0 0

SCOTLAND.

For the erection of the remaining 150 houses at Mossend to accommodate munition workers, for the Lanark Town Council.

Accepted tenders.

J. M. Donald, Glasgow, carpenter and joiner work	£16,016 11 10
J. J. & P. M'Lachlan, Larbert, digger, brick, and mason work	13,589 6 3
G. Munro, Glasgow, plumber work	7,312 12 10
P. White & Co., Glasgow, slater work	4,058 6 4
H. S. Bathgate, Glasgow, plaster work	1,607 18 7
P. S. Murray, Hamilton, painter work	741 6 7

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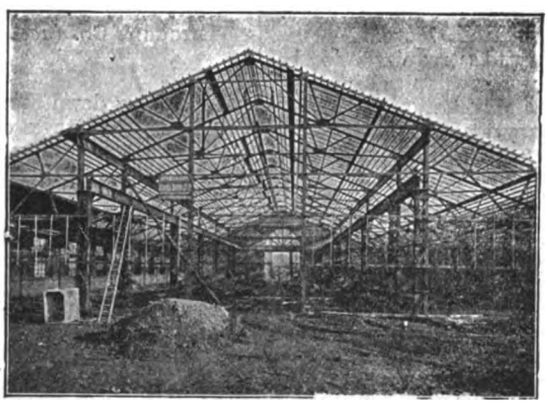
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MEASURES OF DISTANCE IN PALESTINE.*

By Colonel SIR CHARLES WATSON, K.C.M.G., C.B.

THERE is a matter in connection with the study of the geography of the Holy Land which sometimes causes difficulty to those who are interested in the subject, and who wish to follow on a map the accounts of the topography of the country and of the relative positions of places referred to in the Bible, the Books of the Jewish historian Josephus, and the descriptions of other ancient writers. To an Englishman the word "mile" conveys the idea of an English mile, and the word "furlong" of an English furlong, and it is overlooked that, eighteen centuries ago, the mile and furlong were not the same length as in England at the present day. Then again, while the maps published by the Palestine Exploration Fund are drawn in acordance with English scales, maps issued in France and some other European countries are usually compiled on a scale based on the metric system of measures. For reading maps in connection with history it is very necessary to be familiar with the different measures, and to remember their relative lengths without having constantly to refer to some treatise dealing with them. A few remarks on the subject may, therefore, be of help to those who are interested in the question, and who have not had the occasion to devote themselves to a study of it.

Measures of length may be conveniently divided into two classes; first, the longer measures, such as the mile, the furlong, and the kilometre, which may be called measures of distance; and, secondly, the shorter measures, such as the yard, the foot, the inch, and the metre, used for buildings, for manufactures, and for domestic purposes. It is with the former measures that I propose to deal in this paper.

At what period measures of distance were first reduced to a regular system is not known, but they certainly date back to the remotest antiquity with which we are acquainted, and were as carefully fixed in the days of the Babylonians and of the ancient Egyptians as in the time of the Greeks and Romans. It is evident that such measures were originally used by some people who had a high degree of scientific knowledge, and who were aware of the fact that the earth was a sphere and not a flat surface, as supposed by more ignorant people who succeeded them. They must have had an acquaintance with astronomy and mathematics, and have been able to make use of the heavenly bodies for getting measurements of the earth, just as this is done at the present day, but how they acquired that knowledge is an unsolved problem.

There is an interesting passage in the "Antiquities of the Jews," in which Josephus gives his solution of the question. After describing the creation of Adam and Eve, the murder by Cain of his brother Abel, and the birth of Seth, Josephus goes on to say:—"Now this Seth, when he was brought up and came to those years in which he could discern what was good, became a virtuous man, and, as he was himself of an excellent character, so did he leave children behind him who imitated his virtues. All these proved to be of good disposition. They also inhabited the same country without dissensions, and in a happy condition, without any misfortunes falling upon them until they died. They also were the inventors of that peculiar sort of wisdom which is concerned with the heavenly bodies, and their order." And, in another place, Josephus says of Noah and his predecessors: "God afforded them a longer time of life on account of their virtue, and the good use they made of it in astronomical and geometrical discoveries, which would not have afforded the time of foretelling the periods of the stars unless they had lived six hundred years; for the Great Year is completed in that interval."

Whatever may be thought of this explanation by Josephus, there can be no doubt that measures of distance were based on measurements of the earth, and on the ancient division of the circle into degrees, mniutes and seconds. This division was founded on the equilateral triangle, which was regarded by the old mathematicians as of special importance, and rightly placed by Euclid in the first proposition of his First Book. The angle of an equilateral triangle is the unit of angular measurement, and, when the measurement of angles was taken in hand by the ancients, they divided this angle into sixty parts, the best possible number that could have been selected, as $60 = 3 \times 4 \times 5$, and is divisible by 2, 3, 4, 5, 6, 10 and 12. Each of the 60 parts was called a degree, each degree was divided into 60 smaller parts called minutes and each minute into 60 seconds. As the angle of an equilateral triangle is contained six times in a complete circle, the number of degrees in a circle was 360. This, which may be called the natural division of the circle, has been in use from the remotest antiquity to the present time, and it is improbable that it will ever be superseded by any other system.

At the time of the French Revolution of 1792, certain French scientific men thought they could improve on the ideas of their predecessors by dividing the circle into 400 degrees, each degree into 100 minutes, and each minute into 100 seconds. But, notwithstanding strenuous efforts to introduce it, the decimal division of the circle has proved a failure, and the ancient system continues in general use.

The manner in which measures of distance are based on the form of the earth is as follows: If a circle is described, with the centre of the earth as its centre, passing through the north and south poles, it will be cut in half by the equator, and an arc of 90 degrees will be intersected between the pole and the equator. The length of one-sixtieth of a degree, or one minute of arc, measured on the surface of the earth along this circle, is called a geographical mile, and is the unit of measures of distance. If the earth were a perfect sphere. the length of a geographical mile would always be the same, but, as the diameter from the north pole to the south pole is a little less than the diameter across the equator, the circle, passing through the two poles, is not perfect, and in consequence of this the geographical mile varies somewhat, and increases from a length of 6,046 English feet at the equator to 6,108 English feet at the pole. Its mean length may be taken as approximately 6,075 English feet. We do not know whether the ancient astronomers of the East were acquainted with the fact that the earth was not a perfect sphere. but there can be no doubt that this length of 6,075 English feet was very nearly what was adopted in early times as the length of the geographical mile.

With the Greeks, the principal unit of measures of distance appears to have been the stadion, of which ten were contained in the geographical mile. The stadion was divided into six plethra, each plethron having a length of 100 Olympic feet. There were therefore 6,000 Olympic feet in the geographical mile, the Olympic foot being equal to 12·15 English inches. The Greek system of measures of distance was an admirable one, and it is to be regretted that it was not adopted by the Romans.

* A contribution to the last quarterly statement of the Palestine Exploration Fund.

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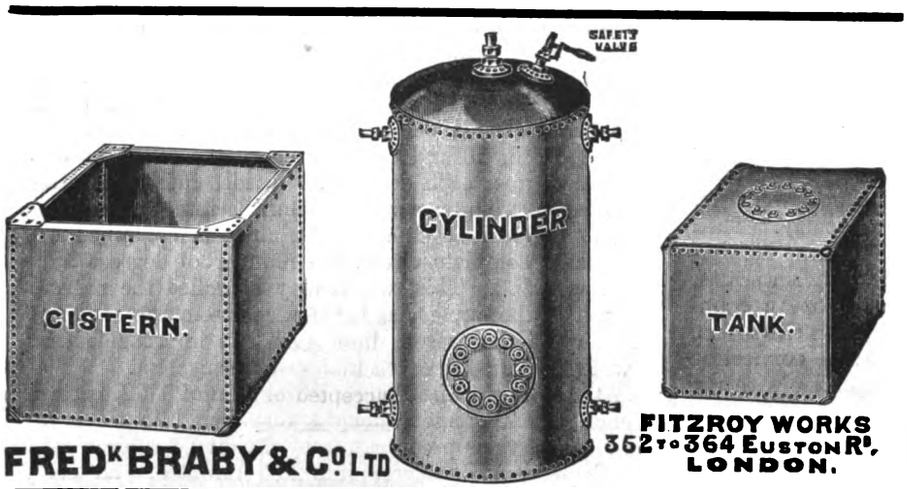
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But the latter made their land mile equal to eight instead of ten stadia, and also divided the mile into 1,000 paces, each pace of five Roman feet, the Roman foot being equal to 11·66 English inches. The word "mile" is derived from the fact that the Roman land mile was 1,000 paces, "mille passuum."

For measurement of distances by sea, however, the Romans adhered to the geographical mile of 10 stadia, and, in the Antonine Itineraries, while distances by land are given in Roman miles of 8 stadia, distances by sea are given in multiples of 10 stadia. In the Itinerary of the Bordeaux Pilgrim, written in the fourth century, while the land distances are in Roman miles, the pilgrim says, with reference to his voyage across the Adriatic Gulf from Macedonia to Italy: "trans mare stadia mille, quod facit milia centum," thus showing that he knew the sea mile was composed of 10 stadia.

The English mile, though it has the same origin, differs from both the geographical and the Roman mile. Like the latter it is divided into 8 stadia or furlongs, each furlong containing 660 English feet. But the English sea mile is the geographical mile, divided into 10 stadia, or, as we call them, cable lengths.

The last of the four measures of distance under consideration is the kilometre, which differs altogether from the other three. When the French Revolution took place at the end of the eighteenth century, it was one of the objects of the revolutionary party to obliterate the history of the world, and, as far as possible, to do away with the records of the past. It was decided that the idea of God was obsolete; a new calendar was started, dating from the year of the Revolution; the week was made to consist of ten days, and the day of ten hours; while, as has already been mentioned, the ancient and scientific division of the circle into 360 degrees was changed to a new division into 400 degrees, each degree being divided into 100 minutes. The arc of the earth's surface measured on a great circle from the equator to the pole was thus made equal to 10,000 minutes, and it was decreed that the new measure of distance, which was to take the place of the old geographical mile, was to be the length of one new minute. The new geographical mile was called the kilometre, because it contained 1,000 metres, the metre being the primary unit of measures of length, and equal to $\frac{1}{10000000}$th part of the quadrant of a great circle from the equator to the pole. The length of the kilometre, as fixed by the French scientists is equal to 3280.84 English feet.

The following is a comparison of the four measures of distance which have been described above. The lengths are given to the nearest foot:—

	Olympic Feet.	Roman Feet.	English Feet.	Metres.
Geographical mile of 10 stadia...	6,000	6,250	6,075	1,851
Roman mile of 8 stadia ...	4,800	5,000	4,860	1,481
English mile of 8 furlongs ...	5,215	5,432	5,280	1,609
Kilometre	3,240	3,375	3,281	1.000

It is useful to remember, for purpose of calculation, that the following relation is very nearly correct:—

20 geographical miles = 25 Roman miles = 23 English miles = 37 kilometres.

Now to turn to the practical side of the question. In books by Roman authors, the Roman mile of 8 stadia is usually given in mentioning distances by land, and the mile of 10 stadia for distances by sea. This rule is followed in the Antonine Itineraries, which are supposed to date from the fourth century, and, in the Peutinger Tables, also believed to be of the fourth century, the land distances are in Roman miles. In the Bordeaux Pilgrim, written about A.D. 330, Roman land miles are used, except in a few cases, where the distances are given in Gallic leagues, which were equal to 1½ Roman miles, or 12 stadia.

In the Books of Josephus, on the other hand, the author, who gives a large number of distances, almost invariably takes a length of 10 stadia, *i.e.*, the geographical mile, as the unit, and not the Roman mile. The distances given by Josephus are generally pretty correct, but in some cases are in error, either in consequence of a mistake in copying the manuscript or because he only gives the distance approximately.

For example, he gives the length of the Jordan Valley, including the Lake of Tiberias and the Dead Sea, as 230 stadia, whereas he must have written 1,230 stadia, as the distance measured on the map from the north end of the Lake of Tiberias to the south end of the Dead Sea is 1,220 stadia. He gives the length of the Lake of Tiberias as 140 stadia and the breadth as 40 stadia. The actual length at the present time is 115 stadia, and the extreme breadth 65 stadia, but it is possible that he may have referred to the breadth opposite the city of Tiberias, which is 45 stadia.

Josephus gives the distance from Jerusalem to Caesarea as 600 stadia. This may be compared with the distance of 73 Roman miles, or 584 stadia, as noted by the Bordeaux Pilgrim. As measured on the map the distance is 580 stadia, but it may have been a little more, as one cannot be sure of the exact line of road referred to. Again Josephus gives the distance from Jerusalem to Jericho as 150 stadia, while the Bordeaux Pilgrim makes it 18 Roman miles, or 144 stadia. The actual distance is 145 stadia.

Other instances might be given, but the above are sufficient to show that the distances given by Josephus, when compared with actual distances measured on the map, are very helpful in fixing the position of places mentioned in the "Antiquities" and the "Wars of the Jews."

The distances given in the Bible are few, but, such as they are, they appear to be based on the same unit as those in Josephus. For example, it is stated in Luke xxiv. 13, that the village of Emmaus was 60 furlongs from Jerusalem. Josephus gives this distance as 60 stadia, and this is the actual distance to El-Kubeibeh, which is now generally accepted as the site of Emmaus.

THE Chesterfield Corporation on Tuesday last agreed to consider the provision of further houses. In connection with the difficulty of providing housing accommodation for war workers, the Estates and Development Committee proposed that the acting Borough Surveyor should complete the scheme for the erection of forty houses on the Corporation's land in Derby Road, and that application should be made to the Local Government Board for a subsidy and sanction to the scheme.

THE Society of Engineers (Incorporated) held their annual meeting on Monday last, when the premiums awarded by the Council for papers read before the Society during 1915 were presented by the retiring president, Mr. Norman Scorgie, as follows: The President's gold medal to Mr. Arthur H. Barker, B.A., B.Sc., for his paper on "Future Developments in Heating and Ventilation." The Bessemer premium, value £5 5s., to Mr. Alphonse Steiger for his paper on "The Modern Development of Water Power." A Society's premium, value £3 3s., to Mr. Sydney G. Turner, A.M.Inst.C.E., barrister-at-law, for his paper, entitled "Law and Engineering—Some Points of Contact." A Society's premium, value £2 2s., to Mr. Frank Grove for his paper on "Main Roads—Past and Present."

SECOND-LIEUTENANT GEORGE HOWARD JONES (2nd Welsh Regiment) has been awarded the Military Cross. He is a son of Mrs. J. P. Jones and the late Mr. J. P. Jones, architect, of 66 Cathedral Road, Cardiff. Two of his brothers have commissions, and a third is Mr. Ivor Jones, partner in the firm of Messrs. Ivor Jones & Percy Thomas, architects of the New Technical College, Cardiff. Mr. Thomas is now in training with the Artists' Rifles. Second-Lieutenant G. Howard Jones is also an architect by profession, and before joining the Army in September 1914, was on the staff of the Office of Works—a Government appointment. He has been responsible, on two occasions, for exceedingly useful military work. As brigade scout officer he discharged difficult observation duties in the front trenches, and has submitted reports and sketches of great importance. On another occasion, in company with another officer and two men, he figured in an exciting wire-cutting episode between the British and German trenches in the neighbourhood of Loos.

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VARIETIES.

MR. E. GUY DAWBER, F.S.A., F.R.I.B.A., lectured recently before the Berks Archæological Society at its headquarters, the Abbey Gate, Reading, on "Three Mountain Roads in Tyrol, Austria, and Italy."

THE burning of our own Houses of Parliament nearly eighty-two years ago was, like that of the Parliament House at Ottawa, attributed at first to incendiaries. The man in the street of those days suspected a firm of builders, who had done it "to make a job for themselves."

SIR R. BORDEN has sent the following cable reply to a message of sympathy at the destruction by fire of the Parliament House at Ottawa: "Above the ruins of the historic building just destroyed will arise an even more stately edifice, symbolising the renewed purpose and undaunted spirit of the Canadian people."

A NEW picture house, the Casino, has been erected in Wales Street, Aberdeen, from the design of Messrs. George Sutherland, A.R.I.B.A., & Clement George, architects, of that city. Accommodation is provided for 600 on the ground floor and 300 in the balcony. The decorations are of a Moorish character.

INFORMATION has been received that Second-Lieutenant Theodore Herford, of the Royal Engineers, son of Mrs. Philip Herford, of Withington, has been wounded in France. He was educated at Manchester University, and was by profession an architect. He originally enlisted in the 1st Life Guards.

TWENTY-TWO men, including the keeper, the assistant keeper, and the usual attendants at the Wallace Collection, Hertford House, Manchester Square, were sworn in as special constables at the Marylebone Police Court last week, for the purpose of doing police duty at the Wallace Collection and releasing for street duty the members of the Metropolitan Police Force who have hitherto protected the building and its valuable contents.

THE Prudential Assurance Company, Ltd., have erected a suite of offices in Arbroath. The new building occupies a site at the corner of High Street and Hill Street, one of the most central positions in the town, and is of satisfactory design. The design was prepared by Mr. J. H. Pitt, M.S.A., F.S.I., of London (the company's district office surveyor), and Mr. Hugh Gavin acted as local architect.

THE Canadian Commission of Conservation propose to form a Civic Improvement League, and promises of co-operation have been received from Montreal, Toronto, and 400 other cities, towns, and villages in Canada, and a large membership is already assured. The general object of the League is to promote the study and advancement of the best principles and methods of civic improvement and development, and to secure a general and effective public interest in all municipal affairs.

LIEUTENANT-COLONEL JAMES ANDERSON, 1/6th H.L.I., who has been made a Companion of the Distinguished Service Order, is a son of ex-Bailie Robert Anderson, and has been associated with his present corps since 1898. Prior to that he served three years as a private in the Glasgow Highlanders. He is forty-two years of age, and is a partner of the firm of Messrs. C. T. Bowie, Fisher & Co., painters and decorators, 26 Bothwell Street, Glasgow.

LIEUTENANT-COLONEL W. J. MILLAR, who has been awarded the D.S.O., was second in command of the 1/5th King's Own Scottish Borderers (Dumfriesshire and Galloway Territorials) when they left for the Dardanelles at the end of May last, and he was appointed to the command shortly after arriving at Gallipoli. He continued with his battalion till the evacuation of the Peninsula, and came through these strenuous times without injury. Colonel Millar was for many years associated with the Dumfriesshire Volunteers, and he succeeded his father in the command of the Annan Company. In business he is a water engineer, and a partner of the firm of Messrs. J. S. Mil'ar & Son, plumbers and engineers, Annan.

MR. A. HAMILTON SMITH, Keeper of Greek and Roman Antiquities at the British Museum, read an illustrated paper on Tuesday last on "Some Greek and other Reliefs recently acquired by the British Museum," before a meeting of the Society for the Promotion of Hellenic Studies. Interesting photographs were shown of votive and tomb reliefs, the latter including single figure, double figure, and group examples. Mr. Smith mentioned that one of the Greek reliefs recently acquired was found in a London builder's yard, where it had lain for some years. Another was found in Jersey, where it had formed part of the pavement of a cottage yard, fortunately having been placed face downwards.

THE scheme for embellishing the marble vestibule at the City Hall, Cardiff, with Welsh historical statuary is approaching fruition. The scheme was originated about two years ago, Lord Rhondda (then Mr. D. A. Thomas) offering to the Corporation to defray the cost, estimated at £15,000. A number of sculptors have been engaged on the various models—of which there are eleven—and these are now practically complete. It is hoped to hold an exhibition of them in London during the early summer, and to instal the completed works in the City Hall probably in September.

A NEW County Council school for infants and combined domestic science was opened at Porthcawl last week by Mr. John Grace, chairman of the group managers. The school stands on a corner site adjoining New Road and Blackmouth Road, and comprises several well-lighted and ventilated class-rooms. It accommodates 156 scholars, and a combined domestic science centre for twenty older pupils, with cloak rooms, marching corridors, stores, medical inspection and teachers' room, also a verandah. Externally the building is faced with red brick and Forest of Dean stone dressings, and the roofs are covered with North Wales green slates. The buildings were erected from the designs of Mr. D. Pugh-Jones, F.S.I., M.S.A., county architect, Cardiff, Mr. Richard Jones, of Caerphilly, being the contractor.

IN the issue of the "Morning Post" for February 7 appears a letter from Mr. Arthur A. Baumann, of 44 Hyde Park Square, W., which makes particular reference to Mr. Runciman's speech in the House of Commons where he pointed out that "We must now lay the foundation for the future of British trade." We are receiving, like many other journals, constant communications on the subject of the capture of trade for Great Britain, and very rightly and willingly we render our assistance. To what use the following quotation from Mr. Baumann's letter will show: "I am interested, together with some friends, in forming a cement factory. The capital has been guaranteed, subject to the Treasury's consent; negotiations for the land and the erection of plant have been completed, and the Treasury Committee refuses its consent, and does so upon the instigation of the representative of the Board of Trade! How are new industries to be started, or German ones captured, if the issue of capital is forbidden?"

AT the last meeting of the Wallasey Town Council it was reported that the contract for the Town Hall amounted in all, exclusive of furniture and road making, to £97,779, and they had already paid £59,469. The amount sanctioned and borrowed to date was £37,650, and the Local Government Board had now sanctioned their application to borrow a further £30,000 for the completion of the work in hand. The Mayor remarked that after two months' consideration by the Government the action of the Council in proceeding with that scheme was proved to be justified. The interesting function of placing in position the ornamental apex to the tower of the new Town Hall at Wallasey was performed by the Mayor of Wallasey on the 7th inst. The apex consists of a copper urn, seven feet high and four feet in diameter, weighing three cwt. It stands at a distance of 150 feet from the ground and about 200 feet above the level of the promenade. In the urn was placed a sealed bottle containing copies of the Liverpool and Wallasey papers, a number of coins, and a record of the event.

OWING to the shortage of housing accommodation in Birmingham, the Trades Council has appointed a deputation to see the Lord Mayor, and to urge immediate action to relieve the situation. The Trades Council have evidence of working-men having been searching for houses for months without success, while women had tramped the city over in pouring rain on the same hopeless quest. There are said to be no decent working-class houses vacant in Birmingham.

A PETITION was presented to Port-Glasgow Dean of Guild Court on the 4th inst. for permission to make extensive alterations on the shipbuilding works formerly occupied by Messrs. Robert Duncan & Co., shipbuilders, and recently acquired by Messrs. Russell & Co. Permission was asked to demolish certain buildings in Shore Street and Water Street, and to erect new buildings to be used as time offices, machinery shops, and boundary walls. In Shore Street, which is the main thoroughfare between Glasgow and Greenock, it is proposed to set back the walls 12 feet, giving this additional width to the street. The plans were approved, and permission was granted meantime to demolish existing buildings.

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THE
Architect and Contract Reporter.
FRIDAY FEBRUARY 18, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITION OPEN

DUBLIN.—The Senate of the National University of Ireland invites architects to submit designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2*s*. deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

ABERTILLERY.—Feb. 26.—For new flooring at the Powells' Tillery Institute, Abertillery, Mon., for the Trustees and Committee. Mr. F. R. Bates, architect, 30 Commercial Street, Newport.

BEVERLEY.—Feb. 28.—For erection of foreman's house and two cottages at the High Eske Farm, near Beverley. Mr. R. H. Whiteing, architect, 3 Ladygate, Beverley.

DEWSBURY.—Feb. 25.—For the various works required in erection of two shops in No. 1 Arcade, Northgate. Messrs. Kirk, Sons & Ridgway, F.R.I.B.A., architects, surveyors, and valuers, Market Place, Dewsbury.

HAYFIELD.—Feb. 21.—For the re-roofing of a building at the Wood Print Works, Hayfield, Derbyshire, for the Calico Printers' Association, Ltd. Deposit £1 1*s*. The Engineering Department, Calico Printers' Association, St. James's Buildings, Oxford Street, Manchester.

HOVE.—Feb. 23.—For alterations and additions to the electricity works, Davigdor Road, for the Town Council. The Borough Surveyor's Offices, Town Hall, Hove.

IRELAND.—Feb. 22.—For erection of a goods shed, for the Belfast Harbour Commissioners. Mr. T. S. Gilbert, M.I.C.E., harbour engineer, Harbour Office, Belfast.

LANCASTER.—Feb. 21.—For the whole work in new temporary ward block at the Royal Lancaster Infirmary. (Messrs. Austin & Paley, architects, Lancaster.) Messrs. Wright & Son, surveyors, Lancaster.

LEEDS.—Feb. 29.—For substituting with iron pipes the present lead hot-water pipes in blocks 1, 2, and 4 of the workhouse, Beckett Street, Leeds, now occupied by the military authorities. Tenders from firms other than plumbers will not be considered. Forms of specification and tender may be obtained at the office of Mr. J. H. Ford, clerk, Poor Law Offices, South Parade, Leeds.

OAKDALE.—Feb. 23.—For erection of a workmen's institute at Oakdale Village, for the Oakdale Institute Committee. Deposit £2 2*s*. Mr. A. F. Webb, M.S.A., architect and surveyor, Blackwood, Mon.

PADDOCK.—Feb. 22.—For the various works required in erection of warehouse and shops, Paddock, Yorks. Messrs. Lunn & Kaye, architects and surveyors, Huddersfield.

ST. ANNES-ON-SEA.—For the following at the Garden Temple, for the Urban District Council: 257 yards super dark green tinted glass; fourteen light iron roof trusses, 30-foot span, pitch 25 degrees, to support glazed roof; sixteen trellis-work columns, each 10 feet high; and sixteen steel uprights of second-hand metal, 40 lb. per yard, each 15 feet long. The Surveyor, St. Annes-on-Sea.

SALFORD.—Feb. 24.—For alterations to gas-meter testing office, for the Corporation. Borough Engineer, Town Hall, Salford.

SEASCALE (CUMBERLAND).—Feb. 19.—For the brick and mason work, slating and plastering and plumbing work in the erection of a house at Seascale. Mr. J. Tyson, The Glen, Seascale, Cumberland.

WALES.—March 2.—For extensive additions and alterations to the offices of Messrs. Cory Bros. & Co., Ltd., Bute Street, Cardiff. Mr. G. E. Halliday, F.S.A., architect, 9 Quay Street, Cardiff.

THE elevation of the Roman Catholic diocese of Newport to the status of an Archbishopric and the recent appointment of its first Archbishop of Cardiff are understood to betoken the erection of a Roman Catholic cathedral in the latter city. Hitherto the cathedral church of the diocese has been at Belmont in Herefordshire.

AT the last meeting of the Dublin Industrial Development Association it was reported that in answer to an inquiry of the Council, an Irish slate company wrote stating they were prepared to supply large quantities of slates promptly when ordered. The secretary was instructed to send a copy of this letter to the city architect. In the same connection a member reported that an Irish cement company was now in existence, and prepared to supply cement of standard quality in any quantities required. They had established a local agency in

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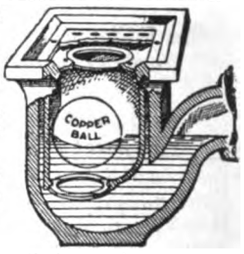
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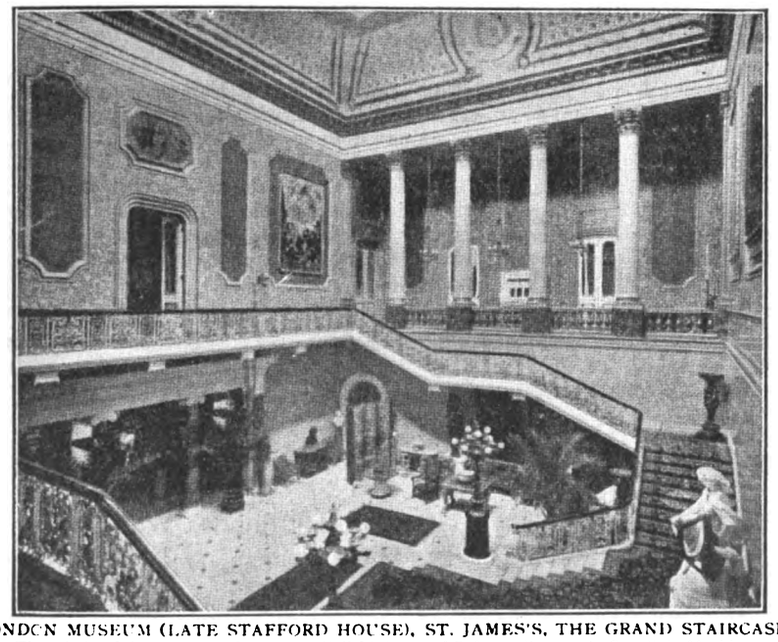
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TENDERS.

CHURWELL.

For the erection of three-storey warehouse, engine-house, engine-beds, gas-production plant, &c., at Millshaw Leather Works, for Messrs. W. L. Ingle, Ltd. Mr. T. A. BUTTERY, Licentiate R.I.B.A., Leeds and Morley.

Accepted tenders.

Spensly, High Street, Morley, mason	£1,020 14 9
Iredale & Son, Bradford Road, Birstall, concretors	870 17 10
Lazenby Bros., Headingley, Leeds, joiners	545 15 1
Roberts & Co., Cutler Heights, Bradford, ironfounders	361 10 0
Clegg, Queen Street, Morley, plumber	134 19 10
Atkinson & Son, Whitehall Road, Leeds, slaters	120 6 0
Iredale & Son, Bradford Road, Birstall, plasterers	66 14 2
Heywood & Co., Bayhall Works, Huddersfield, patent glaziers	36 19 1

IRELAND.

For the erection of dwellings and the execution of other works on the Ormond Market area, for the Dublin Corporation. The CITY ARCHITECT, Dublin.

H. & J. MARTIN, Dublin (*accepted*)	£20,037 0 0
Works Committee's estimate	22,298 18 10

LONDON.

For removing iron buildings and re-erecting them in the playgrounds of the Deansfield Road and "Gordon" schools, Woolwich, for the London County Council.

Deansfield Road.

Leng	£1,995 0 0
Fletcher	1,925 0 0
Garrett & Son	1,607 0 0
F. & T. THORNE, Isle of Dogs (*accepted*)	1,495 0 0

"Gordon."

Leng	1,932 0 0
Fletcher	1,875 0 0
Garrett & Son	1,559 0 0
F. & T. THORNE (*accepted*)	1,395 0 0

MORLEY.

For the erection of a rag shaker place at Parkfield Mills, for Messrs. John Brumfitt & Son, Ltd. Mr. T. A. BUTTERY, Licentiate R.I.B.A., Queen Street, Morley, and Leeds, architect.

Accepted tenders.

Binks & Sons, Clough Street, masons and joiners	£466 0 0
Kellett, Fountain Street, slater	27 7 6
Clegg, Queen Street, plumber and glazier	25 0 0

All of Morley.

GRIMSBY FIRE BRIGADE.

IN these days of motor fire engines it has become quite the custom for fire brigades at large towns to undertake the protection of a considerable area outside their own boundaries. One of the most recent instances is Grimsby, which has entered into such an arrangement with surrounding parishes. The Town Council, deciding to procure another motor fire engine, ordered one of Merryweather's latest "Hatfield" motor pumps, capable of delivering 400 gallons per minute. This engine will be the second of its type at Grimsby, the repeat order being the outcome of the satisfactory four-years' work performed by the first machine. The Grimsby Brigade has two other pieces of motor apparatus, which were also supplied by the Merryweather firm. One is a chemical "first aid" hose tender carrying a fire escape, which has been in commission nearly ten years and is still in excellent condition, while the other is a light general service pneumatic tyred vehicle. The Chief Officer of the Brigade is keenly interested in motor appliances, and was largely instrumental in securing the adoption of the first machine ten years ago. Such appliances were then practically in their infancy

ELECTRICITY IN BUILDING CONSTRUCTION.

IN the building world the conditions which have to be met from day to day are complex and formidable enough to prevent either the architect or builder thinking very much about the chief concern of most other branches of business—what is going to happen after the war? Most of us feel that if we can "carry on" successfully until the outbreak of peace we shall find some way of achieving "business as usual" when the sluices of trades are opened and all the dammed-up building orders are released. Nevertheless an ounce of forethought is worth a ton of post-mortem reflection; and if it is possible to take the measure of a difficulty before it is tackled, there is a much bigger chance of success.

Just at present one of the troubles which the builder has to face is a shortage of labour—especially of efficient labour. After the war the famine may be replaced by a glut; whether it does so or not depends upon the rate at which men are returned to work and the rate at which the bulding trade recovers its activity. But we may be fairly certain that wages will not be allowed to drop back to the pre-war level. The trade unionist has taken good care to receive guarantees that his forfeited privileges will be restored after the war, but he has given no guarantee that he will not agitate for a continuance of war bonuses and high wages.

Consequently the after-war problem of the builder is really the same as the war problem. In order to get work done at a reasonable cost and in a reasonable time, he has to secure better results without increasing his labour costs. Dilution of labour, which has been resorted to as a military necessity in engineering works is not applicable in the same way to building construction. The scope for unskilled labour in constructional engineering is strictly limited. In point of fact, the only promising auxiliary to skilled labour in building is the use of machinery. We have not reached the stage suggested by Mr. H. G. Wells, at which machines are available to turn out walls complete while the architect stands by with his hands in his pockets and an expensive cigar between his teeth. But we have advanced far along the mechanical road since the days when blocks for the Pyramids were hauled by hundreds of slaves. The large building of to-day is spanned by cranes which lift every stone into position; the stone itself is machine cut and brought to the site by mechanical power; girders from the forge and concrete from mechanical mixers take the place of laborious construction of stone upon stone or brick upon brick by hand.

The larger buildings of the present day may, indeed, be described as machine-made. But in the construction of the ordinary run of houses and shops there is still a common reliance upon manual labour. It is still possible, for instance, in the heart of London itself, where electric power is abundant and cheap, to find a single pulley and rope being used for the haulage of bricks and other materials to the upper storeys. Mortar-mixing by hand is also common; and it is the custom to use manual labour in the carpentering and minor engineering work incidental to construction. These survivals of ancient Egyptian methods are due to the prevalent impression that it does not pay to use electric or other power on small jobs. However, the scarcity and increasing cost of labour may lead to a revision of that fallacy. And a study of the handiness of the electric-motor for operating the smallest, as well as the largest, machines in any position will strengthen the case for the machine against the man.

Electricity is now available in most districts, and an enterprising builder should have no difficulty in arranging with the electrical engineer for a temporary supply at a cheap rate during the months of construction. All that has to be done is to tap the public mains at the nearest convenient point. When that is done, the builder has at command a source of power which may be used for driving mortar or concrete mixers, stone-cutters, circular saws and portable drills and other wood-

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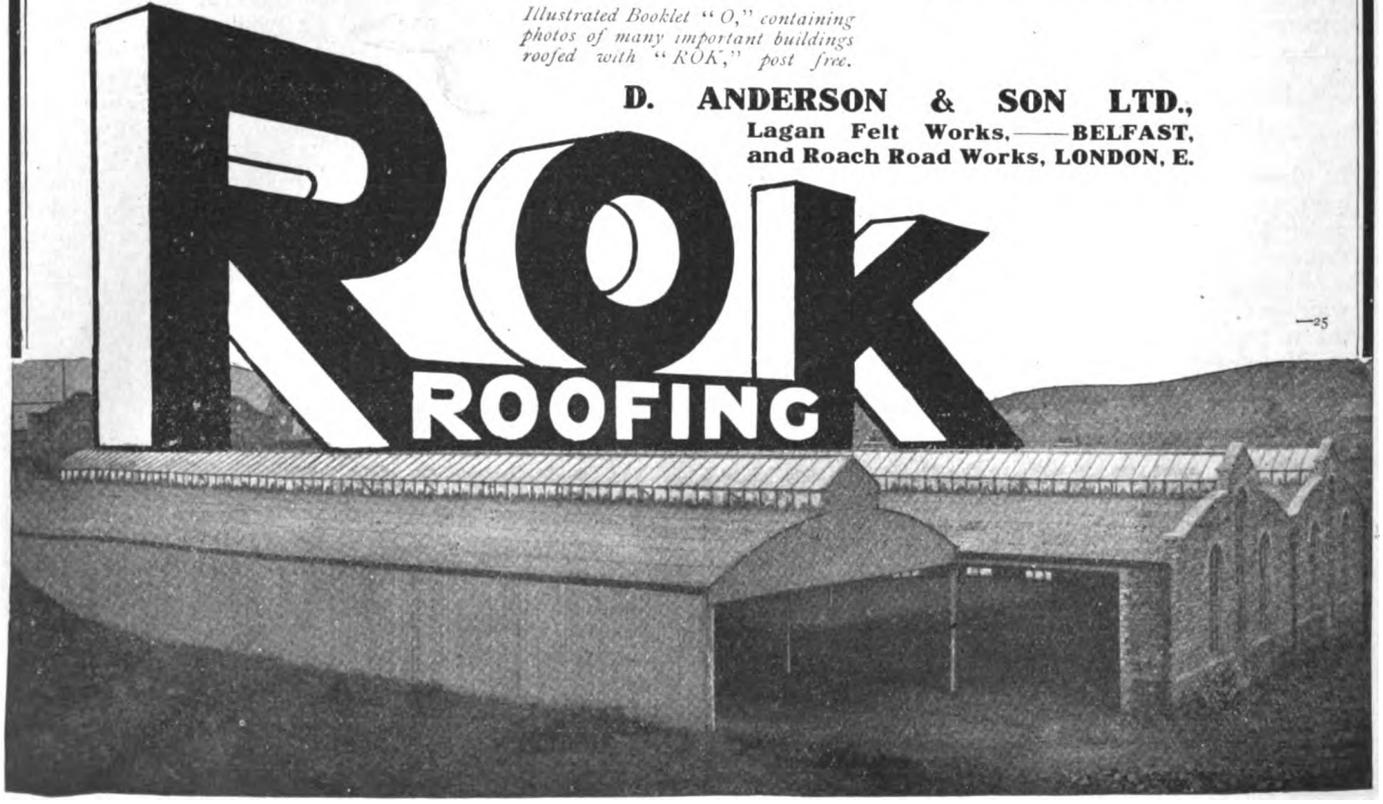
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working appliances, cranes and winches for the handling of materials and also for the temporary lighting of the building.

The first thing to note about the electric-motor—when it is a well-made British machine like the "Witton" motor—is that, like the British marine, it is ready to go anywhere and do anything. A light concrete slab, or even a couple of wooden beams, will provide it with sufficient foundation; and a light wooden box will provide it with sufficient cover. Any handy man is good enough to give the motor all the attention it requires—which is seldom more than oiling and occasional cleaning. Any unskilled man can start or stop a motor, as all he has to do is to move the handle of a motor-starter. When the motor is not working, the current is shut off, so that there is no waste. And after the job is completed the motor can be easily transported to any other site to perform similar duties. As it will last for ten, twenty, or more years, and will do the work of a dozen men, it is a permanent and profitable investment.

The applications of the small electric motor to various purposes are so near and economical that we may almost say that the small job is a more promising field for the electric motor than the large job. The Witton-Kramer Company, for instance, has developed a series of electric winches, electric lifting-blocks, and electric drills which are really portable electric hands equal in value to a score of human hands. The amount of time spent in bringing heavy materials into position can be reduced to a fraction by the use of such machines. In the building yard, where heavy blocks of stone have to be handled, they are invaluable. But in actual building operations they are susceptible of many applications by a skilful contractor.

In many cases it is of advantage to construct a temporary workshop close to the building under construction. For such conditions the electric motor is ideal. Each machine may be provided with its own motor, or several machines can be run from a length of light shafting driven by a motor. The same source which provides power for these labour-saving and money-saving items will also provide electricity for lighting the workshop and the building itself. Here, again, electricity lends itself admirably to temporary arrangements. Flexible cables can be run to any point where light is wanted, and they can afterwards be taken down for use elsewhere. British-made electric lamps of the latest type are robust enough to stand rough usage without hurt. The Osram lamp, for instance, has a filament of pure drawn tungsten wire, which makes it about as hardy as the old carbon lamp, while it gives three times the amount of light for the same consumption of electricity. Moreover, the Osram lamp maintains its candle-power wonderfully well throughout a long life. Therefore it can be used to give ample light in temporary workshops and in the darker regions of buildings under construction without involving any serious expense. Good lighting, it may be noted, means more accurate and more rapid work, besides reducing the risk of accident. It also enables urgent work to be done both early and late throughout the winter.

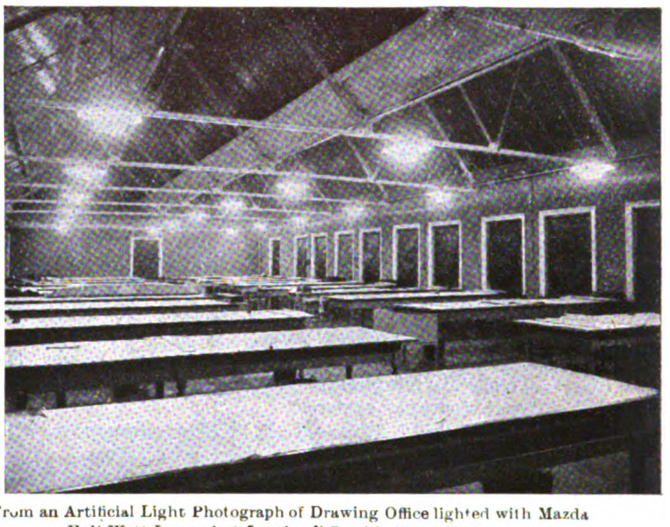
It should be noted, also, that Osram lamps can be provided with strong watertight fittings of wrought-iron or cast-iron. These fittings not only protect the lamps from the weather, but they concentrate the light where it is most needed. Hand lamps can also be usefully employed for special work and for inspection. They are made by the General Electric Company, Ltd. (67 Queen Victoria Street, London, E.C.), to conform to the stringent "Home Office" requirements for the safety of the user.

Where strong illumination is needed over a wide area, as in a yard of a building under construction, nothing could be cheaper or more convenient than the Osram Atmos type lamp, which has an efficiency double that of the ordinary metal filament lamp. That is to say, it gives twice the light of the Osram lamp for the same consumption of electricity. So far, however, the Osram Atmos lamp is made only for high candle-powers about 500 and upwards. Therefore it is best used for general lighting instead of the arc lamp. As the Osram Atmos type lamp, unlike the arc lamp, does not have any carbons which need renewal, it is very much more convenient.

Those are only some of the uses to which electricity can be put in building construction, but they serve to show that the form of power which operates railways and tramways, and drives and lights factories of all descriptions, can be used in accelerating and cheapening the work of the builder.

THE LIGHTING OF DRAWING OFFICES.

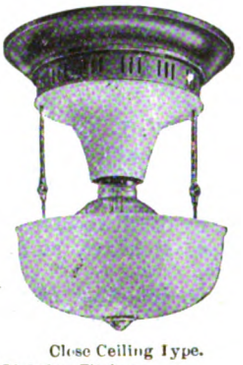
FOR the lighting of drawing offices the British Thomson-Houston Company usually advise the use of Mazda half-watt type lamps in their "Lumina" semi-indirect lighting fittings. A number of drawing offices have been equipped in accordance with this recommendation, and in every case great satisfaction has been expressed by the draughtsmen.



From an Artificial Light Photograph of Drawing Office lighted with Mazda Half-Watt Lamps in "Lumina" Semi-indirect Fittings.



Pendent Type.



Close Ceiling Type.

B.T.H. "Lumina" Semi-indirect Lighting Fitting.

This system of lighting is used by a certain engineering and shipping firm in the Newcastle area whose reputation is known all over the world. The engineer was in conversation recently with one of the B.T.H. lighting experts, and the lighting of the drawing office was mentioned. The engineer stated that he had great difficulty in preventing the draughtsmen using the new lighting during the day time—they declared it better than the natural daylight. This is wonderful testimony to the efficacy of the work of the B.T.H. Illuminating Engineering Department. We give a reproduction from a photograph of a drawing office "Mazda-Lumina-lighted," and also illustrate the close ceiling and the pendant patterns of "Lumina" fittings.

MR. MAURICE B. ADAMS, F.R.I.B.A., is, we regret to hear, at present staying at a nursing home after an operation. His many professional friends will hope to hear shortly of his complete recovery.

THE Liverpool Water Committee have decided to insure against hostile aircraft the whole of their property, both in Liverpool and at the watersheds, to a total value of £3,500,000.

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PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 23,521. Dec. 4, 1914.—Thos. Dobson, jun., and the Churnet Valley Engineering Company, Ltd., Churnet Foundry, Leek, Staffordshire. Stoves.

23,924. Dec. 11, 1914.—George Prentice, 191 Fletton Avenue, Old Fletton, Peterborough. Scrapers for removing distemper or the like from ceilings and other surfaces.

555. Jan. 13, 1915.—W R. K. Gandell, 58 Ladbroke Grove, Notting Hill, London, and R. A. Janes, 2 London Road, High Wycombe. Method of joining woodwork.

623. Jan. 14, 1915.—William Bremner, Tay Street, Invercargill. Door fastener.

816. Jan. 18, 1915.—F. W. Hargrave, South River, Middlesex, New Jersey, and J. A. Wheeler, Somerset, New Jersey, U.S.A. Methods of forming fireproof building construction such as doors, trim, or the like.

894. Jan. 19, 1915.—William Feldenheimer, 20 Holborn Viaduct, E.C., and W. J. Gee, 48 Kingsmead Road, Tulse Hill, S.W. Method of nullifying discolouration in substances such as clay.

1,069. Jan. 22, 1915.—W. H. Lowe and John Shepherd, Jubilee Works, Walsall Road, Willenhall. Lever locks and latches.

2,546. Feb. 17, 1915.—H. H. Berry, 78 Upper Thames Street, E.C., and W. J. Markham, Suffolk Works, Oozells Street, Birmingham. Electric fires.

2,796. Feb. 22, 1915.—Henry Neville, Borough Chambers, Blackburn. Fasteners for windows.

2,946. Feb. 23, 1915.—Max Wiskott, Flurstrasse 3, Breslau, Germany. Reflectors.

3,819. March 10, 1915.—J. H. Doherty, 26 Whitelake Avenue, Flixton, Manchester. Door or other letter box.

5,823. May 15, 1915.—C. E. Lucas, 73 Halesworth Road, Lewisham. Folding gates.

6,911. May 8, 1915.—J. D. Prior, Empire Works, Holliday Street, Birmingham. Boilers of heating apparatus and hot-water supply systems.

4,502. March 23, 1915.—R. P. Fisher, Claughton Villa, Brincliffe Edge Road, Sheffield. Domestic stoves.

5,418. April 10, 1915.—C. J. & Ernest Hartley, Kearsley Chambers, Stoke-on-Trent. Sewage distributors.

8,977. June 18, 1915.—Fred Dyson, Allan Dene, Netherton, near Huddersfield. Gates.

Any of the above specifications may be obtained from J. D. Roots & Co.

VARIETIES.

MR. W. D. CARÖE has prepared schemes for the erection of churches at Torquay and Loughor, in South Wales, accommodating 546 and 707 people respectively, in place of the present temporary structures.

THE death occurred on the 10th inst. of Mr. Alfred Broad, architect, at his Croydon residence, aged fifty-five years.

ALL buildings owned by the Birmingham Corporation have been insured against damage by enemy aircraft, the total amount of insurance being nearly £3,250,000.

MR. JOHN SUTCLIFFE, of Hazelwood, Hebden Bridge, architect, whose death occurred January 2 last, has left estate valued at £15,240 4*s.* 11*d.*, with net personalty £8,931 19*s.*

MR. THOMAS E. SMITH, of the firm of Messrs. Smith & Sons, architects and surveyors, Bolton, has been appointed steward of the local Tempest Estate in place of the late Mr. John Lewis.

THE Kingstown (Ireland) Urban Council on Monday last adopted plans for artisans' dwellings which it is proposed to erect on the Brooklawn and Callaghan Lane sites. Application will be made to the Local Government Board for sanction of a loan amounting to £24,360.

MR. PERSEY has been appointed borough surveyor at Barrow, in succession to Mr. Arthur Race. The senior architectural assistant will be Mr. J. A. Charles, at £210 per annum.

MR. C. WONTNER SMITH is the architect for the substantial repairs required at St. Mary Magdalene's Church, Wardington, which was rebuilt in the fourteenth century. The work, which includes special attention to the tower and vestry, will cost about £1,395.

A BRONZE and marble tablet has been unveiled in the north transept of Selby Abbey, as a memorial of the restoration, at a cost of about £1,200, of the transept by the Freemasons of Yorkshire, after the fire of 1906. The tablet, which bears at the top the masonic emblems, is of bronze, fixed on Italian dove-coloured marble, and was designed by Mr. C. H. Broughton, A.R.C.A., Leeds.

MR. JUSTICE LOW, at the Old Bailey last week, complained that either the atmosphere of the Court was almost stifling or there were draughts which gave one a cold. It was a pity that better arrangements could not be made to accommodate the Judges in the City. It was perfectly disgraceful, and he should adjourn the Court until it was seen to unless something was done about it. He had caught a cold through sitting there the last few days.

A NEW sanatorium provided for the town of Dundee at Ashludie, Monifieth, has been formally opened. The cost of the property, making roads, laying out the grounds, and fencing was £10,000; new buildings and alterations, £9,000; electric installation, laundry machinery, and cooking apparatus, £3,000; and furnishings, £2,000—in all, £24,000. The new work was carried out according to the design of Mr. James Thomson, the city architect.

AT a meeting of the Council of the South Wales Garden Cities and Town Planning Association on the 12th inst. considerable discussion was aroused by a proposal to appoint a sub-committee of women to consider the planning of cottages from the women's standpoint, and to suggest what inexpensive labour-saving devices could with advantage be introduced into workmen's dwellings. The proposal was regarded with favour, and it was resolved to invite a number of representative women from various districts to act on a committee of investigation.

THE announcement that the building work on the London County Council Hall has been suspended at the request of the Ministry of Munitions is an index to the measures which Mr. Lloyd George finds necessary to hasten the erection of new munition factories. It is assumed that the period of suspension will be for the remainder of the war. The new building has been wittily described as "Peter Pan Hall," because of the repeated checks applied to its growth. There was a cessation of work for a year or more after the concrete raft forming the foundations was completed, and at another period the builders' strike delayed operations for many weeks. Designs were accepted in 1908, and the foundation stone was laid by the King in 1912. Originally it was hoped to finish the buildings, which are now probably more than halfway towards completion, by next year, but that event is now removed to an indefinite future date.

THE death occurred on the 11th inst., at the Cottage Hospital, Buxton, following an operation for appendicitis, of Mr. Thomas de Courcy Meade, M.Inst.C.E., late City Surveyor of Manchester, and of Westella, Buxton, at the age of fifty-seven. Mr. Meade began his professional life at Cork, subsequently coming to London. In 1894 he was appointed to his important position at Manchester, where he has carried out numerous great schemes, including a drainage scheme costing a million sterling. At a meeting this week of the Harringay (London) Burgesses' Association, Mr. E. C. Fawley referred sympathetically to the death of Mr. Meade. He recalled that Mr. Meade was formerly associated with the borough of Hornsey, whence he came from the City of London at the age of thirty-five to the office of surveyor for the borough. To Mr. Meade, Mr. Fawley said, they owed practically everything there was for the good of the public weal in Hornsey. He gave them the first dust destructor outside the City of London. He gave them 40 feet roads, and would have had them 10 feet wider. In this he was defeated. He introduced into Hornsey the method of combined drainage. He thought the greatest testimonial to Mr. Meade was the fact that he was an enemy of the builders of Hornsey. Any surveyor who got into that uncomfortable position was an asset to a district. They had a memorial to Mr. Meade in the road named after him.

TRADE NOTES.

THERE can be no need to introduce "Venus" pencils to architects, engineers, or any other technical men whose business is concerned with good draughtsmanship. For "Venus" Perfect Pencils are already to be seen on most drawing tables and sticking out of many waistcoat pockets. But the American Lead Pencil Company are not sure that it is sufficiently realised how their range of seventeen grades supplies a pencil for everybody's every purpose. To spread enlightenment they are offering a really useful box of samples with seven short lengths together with a holder, a "Venus" eraser, and a piece of their copying pencil. Sample boxes will be sent on application to the company, Dept. 722, 173-175 Lower Clapton Road, London, N.E.

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THE
Architect and Contract Reporter.
FRIDAY, FEBRUARY 25, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITION OPEN

DUBLIN.—The Senate of the National University of Ireland invites architects to submit designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2*s*. deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

ABERTILLERY.—Feb. 26.—For new flooring at the Powells' Tillery Institute, Abertillery, Mon., for the Trustees and Committee. Mr. F. R. Bates, architect, 30 Commercial Street, Newport.

BEVERLEY.—Feb. 28.—For erection of foreman's house and two cottages at the High Eske Farm, near Beverley. Mr. R. H. Whiteing, architect, 3 Ladygate, Beverley.

BRIGHTON.—March 16.—The Commissioners of His Majesty's Works and Public Buildings are prepared to receive tenders for the execution of ordinary works and repairs to the buildings in their charge in the Brighton and Hove district during the period of one year from April 1, 1916. Deposit £1. H.M. Office of Works, &c., Storey's Gate, London, S.W.

DARTFORD.—March 1.—For the construction of a timber jetty, about 120 ft. long, in the river Thames at Long Reach, Dartford, for the West Kent Main Sewerage Board. Deposit £3 3*s*. Mr. A. B. Coomber, secretary, Park House, Bromley, Kent.

IRELAND.—Feb. 29.—For carrying out of repairs to the roofs of the fruit and vegetable market, Mary's Lane, Dublin, for the Corporation. Deposit £2. The City Architect, Municipal Buildings, Cork Hill, Dublin.

IRELAND.—March 4.—For reconstruction of premises, Williamsgate Street, Kilrush, for Messrs. McDonagh & Co. Mr. T. T. Hamilton, architect, College Road, Galway.

LEEDS.—Feb. 29.—For substituting with iron pipes the present lead hot-water pipes in blocks 1, 2, and 4 of the workhouse, Beckett Street, Leeds, now occupied by the military authorities. Tenders from firms other than plumbers will not be considered. Forms of specification and tender may be obtained at the office of Mr. J. H. Ford, clerk, Poor Law Offices, South Parade, Leeds.

ST. ANNES-ON-SEA.—For wood block floor for games pavilion, 225 yards super, for the St. Annes-on-Sea Urban District Council. Alternative prices for oak and red deal. Concrete foundation provided by the Council. Surveyor, St. Annes-on-Sea.

SCOTLAND.—Feb. 26.—For the mason, carpenter and painter, slater and plumber works in connection with renewal of smithy roofs, locomotive workshops, Inverness, for the Highland Railway Co. Mr. A. Newlands, engineer-in-chief, Inverness.

SCOTLAND.—For mason, carpenter, slater, and plaster works for alterations on the dwelling-house at Auchindreich (Strachan), for the Arbuthnott Estate. Messrs. Davidson & Garden, 12 Dee Street, Aberdeen.

WALES.—For erection of extensions to Merthyr House, Cardiff Docks. Send names and £2 2*s*. deposit to Mr. H. Budgen, F.R.I.B.A., 95 St. Mary Street, Cardiff.

WALES.—March 2.—For extensive additions and alterations to the offices of Messrs. Cory Bros. & Co., Ltd., Bute Street, Cardiff. Mr. G. E. Halliday, F.S.A., architect, 9 Quay Street, Cardiff.

WALES.—March 3.—For erection of forty-two houses at Pontypandy, Caerphilly, for the Pontypandy Building Co. Also for the construction of roads and sewers at Pontypandy, for the above company. Plans, &c., can be inspected and all information obtained at 72 Bute Street, Cardiff. Mr. W. Dowdeswell, M.S.A., architect, Treharris.

WALES.—March 4.—For alterations and additions to shop premises at Treforest, for the Ynysybwl Co-operative Society, Ltd., Ynysybwl. Messrs. A. Ll. Thomas & G. S. Morgan, architects and surveyors, 23 Gelliwastad Road, Pontypridd.

WORKINGTON.—Feb. 29.—For the various works required in alterations to premises in Finkle Street, for Mr. J. T. Lister. Messrs. W. G. Scott & Co., architects and surveyors, 2 Park Lane, Workington.

TENDERS.

ACTON.

For extensions to factory, Messrs. Lyon & Wrench, on original schedule. Mr. GEORGE E. CLARE, architect, Harrow.

Jones & Son (*accepted*)	£2,000 0 0

LEICESTER.

For erection of detached dwelling house, for J. Moore, Esq., "Uplands" Estate, Thurnby. Messrs. CLARE & SIMONS, architects, Leicester.

Rudkin & Son	£725 0 0
Oldershaw	697 10 0
Simons	683 0 0
Haddon	675 0 0
Richardson	650 0 0
W. POTTER (*accepted*)	630 0 0

For private garage (two cars), potting shed, greenhouse, and basement, for Mr. Arthur Wilkes, Thurnby. Messrs. CLARE & SIMONS, architects, Leicester.

Wright	£550 13 10
Potter	512 3 3
F. HEATH (accepted subject to omission of various items)	483 10 0

SCOTLAND.

For the various works required in erection of new parcel office, Falcon Square, Inverness Station, for the Highland Railway Co. Mr. A. NEWLANDS, engineer-in-chief, Inverness. Quantities by J. ARTHUR SMITH.

Accepted tenders.

Hector MacVinish, 2 Rangemore Road, Inverness, mason and brickwork . .	£449 16 5
John MacRae, Lentran, carpenter and joiner work	234 9 2
D. Dallas & Co., 45 Windown Street, Inverness, plaster and asphalt work . . .	154 1 6
Henry Walker & Son, Ltd., Gallowgate Iron Works, Newcastle-on-Tyne, steam heating	71 2 6
William Urquhart, 53 Eastgate, Inverness, plumber and drainage work . . .	53 9 8
Kenneth Chisholm, 74 Church Street, Inverness, painter and glazier work . . .	25 15 9

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THE LONDON ASSOCIATION OF MASTER DECORATORS.

A MEETING of the council was held at the Holborn Restaurant on Tuesday, January 25, at 6.30 p.m. There was a good attendance of members and Mr. M. C. Cowtan occupied the Chair.

The minutes of the last council meeting having been read and approved, a letter was read from Mr. J. Bancroft, Secretary of the Journeymen's Association, calling attention to some work being done at a munition factory in the West of London, where the rate of wages being paid was 8½*d*. Mr. Bancroft asked for the assistance of the Association in getting the proper union rate of 9½*d*. paid. The subject was discussed at considerable length and on the motion of Mr. Roberson, seconded by Mr. Anderson, it was resolved that a letter be sent to Mr. Bancroft, of the Men's Union, stating that the London Association of Master Decorators sympathise with the attitude the men's union are taking up with regard to munition works and look forward with great interest to the day when there will only be one rate of pay to painters throughout the London area, including both building and decorating works.

The next business was to consider the revised syllabus in the City and Guilds of London Institute examinations in Painters' and Decorators' work. Mr. C. E. Wilkinson, who occupied the chair (Mr. Cowtan having been called away), stated that the new syllabus had been drawn up with great care by a Committee, and that copies of it had been sent to this Association, in order that it might be further revised if necessary. Mr. Stewart-Greene moved that the matter be left in the hands of the Education Committee. In the course of a brief discussion which followed, Mr. Anderson urged that the members should take a much stronger interest in the trade schools than they had hitherto done.

A proposition was then brought forward by Mr. Dakin and was as follows:—

NATIONAL REGISTER.

A Proposal for Widening its Scope for Commercial and Trading Purposes and for the Benefit of the Community.

It occurs to me that in view of the fact that the National Registration of 1915 gives the Government a full list of all the population in this country, an opportunity presents itself of turning this register to many practical uses. Foremost among such, in my opinion, is a scheme to authorise the London Chamber of Commerce and our trade associations to gain access to the National Register so as to give their members accurate information of householders' and traders' change of their address whereby the tendency to dishonesty or laxity in connection with debts would be overcome or largely counteracted. This result, I take it, would be a decided gain to the community; firstly, by stopping waste of traders' money and time, and secondly, by tending to improve the stability of the general populace, as a person, knowing he cannot hide himself from creditors, is not so likely to incur debts he cannot meet.

I would like to put one or two instances forward in order to show the need for some protection to trade. I give here one or two instances which have come under my personal experience. These will serve the purpose, although doubtless most of you have had, and could give, others possibly even more forcible: (*a*) A lady moving in good society takes a furnished house and gives many orders to local tradespeople. They make inquiries and can gain no information which is detrimental, and they send in their account from time to time, but do not succeed in obtaining payment before she leaves. Inquiries are made through all possible channels, and the trader is informed that letters addressed to a particular place will reach her. They send letters and get no response, they make a call only to find that the lady uses this address for forwarding letters, but has not disclosed her whereabouts; and (*b*) a professional man has a business address in town, and is the owner of a house in the suburbs. He has been respected, and credit has been given, but later on he does not pay his bills. On sending further accounts and calling, it is found that he has left and the house has been let furnished. The person living in the house has no authority to give the address, may perhaps be in league with him; at any rate, no address is forthcoming at that source. Inquiries are made at the business address. It is found that he has given up this address, but one cannot trace where he has gone. It is understood that he has accepted employment under Government, but the Government will not assist traders to get into touch with him. (*c*) A man has lived in the neighbourhood and paid his accounts. He gets into difficulties and is traced to another address. He is seen there, and he makes a promise to pay. Before anything can be done he leaves that address, and writes and tells you that you will hear from his solicitor, whose address is so and so. You apply to the solicitor, who is very polite, but he states he has no authority to give his client's address. He will forward any letter you send him.

In each of these cases it will be observed that evasion on the part of the debtor has prevented the creditor from obtaining 1*d*. of his money.

Another use to which the register could be put would be to enable letters, &c., to be forwarded to their proper destination.

Possibly the carrying out of these suggestions would entail bringing them before Parliament; in that case an influential body, such as the London Chamber of Commerce, would be the most likely one to approach in order that the best means of so doing might be devised.

Mr. Hindley moved and it was agreed that copies be sent to various trade associations, asking their opinion.

A communication was read from Mr. Roberson as follows:—

"I have just received the enclosed circular from the Federation of Master Printers. On reading it carefully through, it occurs to me to be a very polite document which is likely to make large purchasers of printed matter take more notice of the remarks made by the representatives of the various printing firms when they endeavour to explain their difficulties as to price, delivery, &c., arising through the war. The last paragraph in this letter asking consumers to refrain as far as possible from asking for estimates, &c., seems especially applicable to our craft, and I suggest that this letter may be of interest at the next council meeting, with a view to our council acting in some way in a similar manner."

The following is a copy of the accompanying circular referred to:—

The Federation of Master Printers and Allied Trades of the United Kingdom of Great Britain and Ireland.

Dear Sirs,—We are desired by the Council of the above Federation, which represents the Master Printers' Associations in every part of the United Kingdom and speaks on behalf of the printing trade throughout England, Scotland, Wales, and Ireland, to call your attention—

(1) To the constantly increasing cost in the production of printing and its allied arts.

(2) To the difficulties attendant on the giving of estimates in advance owing to the uncertainty of the prices of materials.

(3) To the present shortage of labour and the increasing scarcity which will shortly arise, as the general printing trade has not been scheduled as a reserved occupation.

His Majesty's Government, the municipal authorities, public bodies, railway and other companies, and the large consumers of print generally throughout the United Kingdom have recognised the justice of conceding increases even on existing contract prices, and the Council of the Federation feel confident that the general public will recognise the necessity for considerably advanced prices.

The Council further desire us to point out that in view of the difficulties above mentioned the consumers of print should refrain as far as possible from asking for estimates in advance, and must allow longer time than usual for the execution of their orders.—Yours truly,

REGINALD J. LAKE,
E. TAYLOR TOMLINSON,
Joint Secretaries.

Mr. Stewart-Greene thought that decorators at the present time were only too glad to ask for estimates. Mr. Hindley said that the thanks of the Council were due to Mr. Roberson for submitting the circular in which there were several nice sentences worthy of adoption.

Mr. Anderson gave a report as to what had been done by the Conciliation Board in reference to the question of night jobs and Saturday and Sunday pay. The ques-

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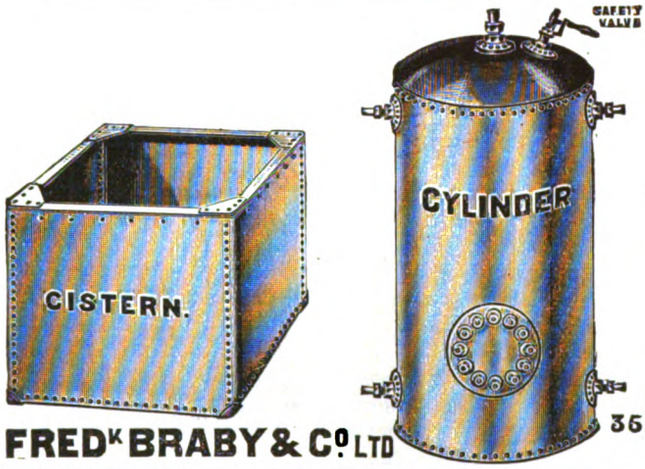
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Owing to the demand for the Cathedral and College Series, all Numbers previous to January 1911 are now charged at 6d. each.
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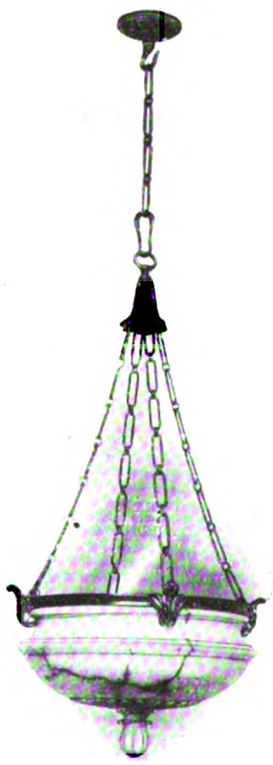
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tion had arisen from one of the members and had been carefully considered, with the result that the following recommendation was unanimously agreed to:—

Finding of Conciliation Board at meeting held on Friday, January 7, 1916, at which the undersigned were present:

Agreed, that the interpretation of Rule 4 as to workmen engaged "from Saturday midnight to Sunday midnight double time," shall be double time at the standard rate of 9½*d.* or 10*d.* per hour. (Signed) John Anderson, J. W. Turner, T. A. Colborne, J. Bancroft, C. E. Wilkinson, A. Davidson.

The next business was to consider the President's circular letter to the trade, and this was approved subject to alterations by the executive if thought desirable.

Mr. Roberson then brought forward the following resolution:—"That in view of the fact that in the London area the apprenticeship system is being replaced, with the assistance of the London County Council, by a system of scientific and practical training under expert craftsmen for a fixed period of three years, when such student is taken as an improver by the members of the London Masters' Association (most of whom are either direct or affiliated members of the National Association), this Council recommends that the National Association will admit all such students to all the examinations and scholarship competitions under their control on exactly the same conditions as fully certified apprentices are at present admitted."

Mr. Stewart-Greene seconded.

Mr. J. Anderson, in supporting the resolution, said that there was an idea prevailing in some quarters that the boys at the Brixton School, who devoted the whole of each day to study and training, were much better equipped than those who were training in a master's shop.

Mr. Andrews said that there was nothing to prevent any boy attending the excellent polytechnics at night.

Mr. Wilkinson said that there could be no question that the boys at Brixton were well trained. Some of the boys would be released in March and the Association agreed to take them on as improvers. The subject was referred to the Education Committee with power to co-opt. It was pointed out, in the discussion which followed, that it was highly important that all the boys at Brixton be employed as soon as they left school, and that members, therefore, who desired the services of such trained boys should put in an early application, as it was probable that there would not be enough boys available to fill the requirements of the members.

A letter on the subject of light castings was considered, and the subject further adjourned.

"ZETA" WOOD BLOCK FLOORING.

WHAT is necessary in a wood-block floor to ensure long life and general satisfaction?

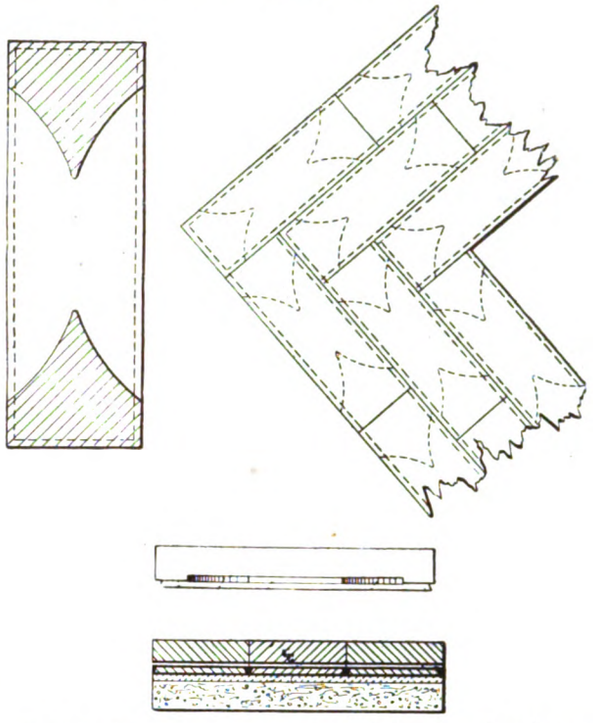
Apart from the elimination of unsound wood, the following conditions should be fulfilled: Absolute adhesion between the blocks and concrete floor, perfect keying, and the adoption of some means that will arrest damp from attacking the block from below and prevent dry rot.

These conditions are secured by W. Bennett's new patent damp-proof and double-keyed system. Previous methods of interlocking by tongues and grooves or dowells and other artificial bonds, as they may be called, have no place in this system, where the keying is made continuous and gives greater security.

As will be seen from the accompanying illustrations, each block is slotted from side to side as far below the wearing point as possible, leaving each end solid.

Before each block is laid on the concrete it is dipped, with a to-and-fro motion, into mastic, which passes through and fills the slot. It is thus protected from damp by three layers between the concrete and the wearing surface; by the mastic bed and on the upper and lower surfaces of the slotted portion of the block.

When placed in position a portion of the mastic flows to the adjoining block and on to the concrete bed, forming a continuous bond to the blocks and strapping each one to the concrete, making them immovable against any wear and tear to which they may be subjected.



Where, however, any portion of the floor has become worn the blocks can be removed and replaced without difficulty, and the continuous key is automatically re-formed.

When it is necessary that the floor should be laid before the concrete is dry no damage will be sustained, as, owing to the three layers of mastic, the lower part of the block is thoroughly protected, and the upper, or wearing, part cannot be reached by moisture from the concrete floor.

The "Zeta" Wood Flooring Co., Jupp Road, Stratford, E., are the sole licencees for Bennett's patent system, the inventor, Mr. Wm. J. Bennett, being general manager of the company. They have recently supplied and laid several thousand yards for the War Office, Middlesex County Council, &c., and have other important contracts in hand.

EARL HOWE, speaking at the recent annual meeting of the Corporation of the Royal Albert Hall, stated that the acoustic qualities of the Hall had been materially improved by replacing the wooden ceiling in the dome by plaster on expanded metal.

ONE of the Norman pillars at the west end of the church of All Saints, Bristol City, has recently developed a crack, and on examination it was found that the foundation of the pillar was faulty. Mr. G. H. Oatley, F.R.I.B.A., believes the work to make the structure absolutely secure will necessitate the building remaining closed for about five weeks.

AT the last meeting of the Selby Urban Council the Property Committee reported that they had had an interview with representatives of Sir W. G. Armstrong, Whitworth & Co. The Committee were informed that about 300 men would eventually be employed at the firm's new works on the Barlow site, and that 100 workmen's houses would be required at Selby. A resolution was adopted by the Council, by seven to three votes, that, subject to the Local Government Board sanctioning the necessary loans, the Council proceed to build 100 houses. The Surveyor is to prepare plans for the first batch of thirty-four houses, and the Local Board will be asked to give immediate sanction to the purchase of the land. A further resolution was adopted, that in letting the houses the Council give preference to Sir W. G. Armstrong, Whitworth & Co.'s workmen, provided that the firm, or the Government Department which require the houses, make some contribution to the increased capital cost caused by the war.

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L.C.C. BUILDING CONTRACTS ECONOMY.

AT the meeting of the London County Council on Tuesday last the Establishment Committee reported that a letter, dated February 7, 1916, had been received from the Ministry of Munitions of War, stating that the Minister of Munitions found it necessary, in view of the great shortage of labour for the construction of munition factories, to give directions under the Defence of the Realm Acts for the immediate discontinuance of the work now in progress at the new county hall, and that he notified the contractors, Holland & Hannen and Cubitts, Ltd., accordingly. The Minister expressed regret at any inconvenience which may be caused to the Council by his action in the matter, which, the letter stated, has only been taken in view of urgent considerations of national interest. The Committee are in communication with the Ministry of Munitions of War and the contractors on the matter.

In the course of the discussion on the above report of the Establishment Committee, Mr. Dew questioned whether the workmen who had been closed out were being found work elsewhere on terms which they could afford to accept. Men with homes in London to keep up could not be expected to accept work in distant places at wages less than they had been receiving. He asked for information as to how the Council stood in the matter, suggesting that the contract would be broken and that there would be a large amount to pay. Mr. J. D. Gilbert drew attention to the difficulties which might arise in connection with office properties held by the Council on lease if the hall were not built by the expected time. Mr. Debenham, Chairman of the Committee, said that the Council had received no previous intimation of the step which had been taken, and matters had gone so far that even the cranes were being removed for other purposes. The position of the Council was a very serious one. He mentioned that on the whole contract of £1,215,000 the sum of £412,000 had been expended, and promised a report as soon as one could usefully be presented. He thought that whatever the inconvenience the Council would bear with it, hoping that it would not continue longer than was necessary.

The Local Government, Records and Museums Committee also stated that they have considered an application of W. E. Blake, Ltd., contractors for the erection of the new sessions house at Newington, for interest to be paid on the prices paid by them for oak not yet taken over from their merchants for the purposes of the contract. With the concurrence of the Finance Committee, it has been, in consequence, decided to allow the contractors, subject to conditions, such additions to the prices quoted as would be equivalent to a rate of interest calculated at the rate of 5 per cent., the allowance to include the cost of storage and all other charges.

W. E. Blake, Ltd., also applied for the release of a portion of the money retained by the Council under the contract. In view of the concessions already granted, the Committee have informed the contractors that the Council is unable to accede to their application.

The Committee further report that they have considered the question of restricting capital expenditure in connection with the erection of the new sessions house. As nothing can be done in this direction except by agreement with the contractors, they have been in communication with W. E. Blake, Ltd., who have intimated that they are not anxious to slow down or to retard the progress of the contract, but that they are willing to meet the views of the Council and H.M. Treasury, provided that they are subject to no monetary loss. The contractors have also drawn attention to a number of factors which they state would involve extra cost if progress were retarded. In view of all the circumstances, the Committee have decided not to take any action for retarding the work, which is, however, being slowed down to some extent owing to the general conditions now prevailing.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 932. Jan. 20, 1915.—Fulcher Concrete Block and Paving Co., 211 Commercial Building, Oakland, California. Moulding presses.

983. Jan. 21, 1915.—Thos. McCrae, 9 S—E, Circus Place, Edinburgh. Roof ventilators.

1,141. Jan. 23, 1915.—Walter Jones, J.P., and Jones & Attwood, Ltd., Titan Works, Amblecote, Stourbridge. Purification of sewage and other liquids.

1,204. Jan. 25, 1915.—R. W. Graves, 900 East Jersey Street, Elizabeth, U.S. Crosscut saws.

2,900. Feb. 23, 1915.—C. F. Kite and M. H. Skelt, 132 Euston Road, N.W. Circulator and pump for hot and cold water and other liquids.

3,831. March 10, 1915.—C. H. Cooper, 15 Dora Road, Wimbledon. Treatment of sewage.

4,890. March 30, 1915.—N. F. Ramsay, Charlotte Square, Newcastle-on-Tyne. Locks and latches.

14,199. Oct. 7, 1915.—W. H. Tonks and Walter Sparks, of Tonks, Ltd., 201 Moseley Street, Birmingham. Opening and closing appliances for hinged windows and the like.

8,013. May 31, 1915.—A. G. Cloake, 54 Holborn Viaduct, E.C. Gas cooking stoves.

17,987. Jan. 18, 1915.—A. J. Bell and P. A. G. Bell, Calder Iron Works, Ravensthorpe, York. Apparatus for adding chemical reagents to water, sewage, and other liquids.

1,422. Jan. 28, 1915.—A. W. C. Schelff and T. S. Allden, Caxton House, Westminster, S.W. Ferro-concrete structures.

13,440. Sept. 21, 1915.—J. H. Morris, 32 Shady Road, Gelli, Ystrad, Rhondda, Glam. Door, gate, and like latches.

754. Jan. 18, 1915.—A. J. Bell and P. A. G. Bell, Calder Iron Works, Ravensthorpe, York. Apparatus for adding chemical reagents to water, sewage, and other liquids.

868. Jan. 19, 1915.—E. F. Stimson, 88 Streathbourne Road, Upper Tooting, S.W. Cut-out storage tanks for use in connection with hot-water apparatus.

943. Jan. 20, 1915.—Isak Opoczynski, 16 Lembergergasse, Podgorze, near Cracow, and Heinrich Halpern, 29 Krakauergasse, Cracow. Hot-plate for cooking stoves.

Any of the above specifications may be obtained from J. D. Roots & Co.

VARIETIES.

THE Midland Railway Company has accepted the tender of the General Electric Company, Ltd., for the supply of Osram drawn-wire lamps for the ensuing twelve months.

THE will of the late Mr. George Bertram Bulmer, F.R.I.B.A., of Tewit Well Well Avenue, Harrogate, partner in the firm of Messrs. Perkin & Bulmer, architects, Leeds, has been proved at £6,384.

THE Architectural Association of Ireland opened last week at their rooms at 15 South Frederick Lane, Dublin, an exhibition of pictures by the members. The work is of a miscellaneous character, and includes water-colours, pencil drawings, and photographs.

JUDGMENT was given by Lord Anderson on the 20th inst. in an action in which Mr. J. Thomson, civil engineer and valuer, Edinburgh, claimed from A. & R. Scott, Ltd., West Mills, Colinton, payment of an account of £600 odd in connection with the preparation of plans for the proposed erection of new mills by the defenders at their Colinton property. It was contended by the defenders that Mr. Thomson's claim was over-stated, and that in any event no instructions had been given by their managing director for the preparation of working plans upon which the major portion of the claim made by the pursuer was based. Lord Anderson awarded the pursuer £229 and expenses. The counsel for the pursuer were Mr. Horne, K.C., and Mr. Fraser, while counsel for the defenders were the Solicitor-General, K.C., and Mr. Wilton.

THE new municipal building of the Spennymoor Urban Council was opened last week. The building, which comprises a Town Hall and Market Hall adjoining, occupies a prominent position in High Street. The Market Hall is 141 ft. long, 39 ft. wide, and 16 ft. high, whilst the Town Hall is 84 ft. long and 40 ft. wide, with seating accommodation for 850 persons. There is also the Council Chamber and offices. There are seven large shops in the new premises. The contractor was Mr. J. Miller, of South Shields, and Mr. Wellburn was the architect.

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THE
Architect and Contract Reporter.
FRIDAY, MARCH 3, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITION OPEN.

DUBLIN.—The Senate of the National University of Ireland invites architects to submit designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2*s*. deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

BRIGHTON.—March 16.—The Commissioners of His Majesty's Works and Public Buildings are prepared to receive tenders for the execution of ordinary works and repairs to the buildings in their charge in the Brighton and Hove district during the period of one year from April 1, 1916. Deposit £1. H.M. Office of Works, &c., Storey's Gate, London, S.W.

IRELAND.—March 4.—For reconstruction of premises, Williamsgate Street, Kilrush, for Messrs. McDonagh & Co. Mr. T. T. Hamilton, architect, College Road, Galway.

IRELAND.—March 6.—For erection of an additional building to their creamery, for the Committee of Ballinascreena Creamery. The Creamery Office, Ballinascreena.

IRELAND.—March 13.—For erection of new premises, for the "Anglo-Celt" Printing Works, Cavan. Mr. P. J. Brady, architect, Ballyhaise, Cavan.

LACEBY.—March 6.—For erection of a pair of cottages, for Mr. G. F. Sleight. Mr. G. H. Allison, architect, Regent House, West Saint Mary's Gate, Grimsby.

MYTHOLMROYD.—March 9.—For the various works required in extension to mills at Mytholmroyd, Yorks, for Ratcliffe Bros. Messrs. Jackson & Fox, architects, 7 Rawson Street, Halifax.

RHYMNEY.—March 12.—For the altering, &c., of the "Windsor Arms," Butetown, Rhymney Bridge, Mon., for Messrs. A. Buchan & Co. The "Windsor Arms," Butetown, or Mr. T. Roderick, architect, Ashbrook House, Aberdare.

SCOTLAND.—March 13.—The Edinburgh Corporation are prepared to receive tenders, in one undertaking, for the various works, excepting the structural steel work, required in the erection of the new electric generating station at Portobello. (Sir Alexander B. W. Kennedy, 17 Victoria Street, Westminster, S.W.) Send application and £3 3*s*. deposit to Mr. James A. Williamson, A.R.I.B.A., Public Works Office, City Chambers, Edinburgh.

SCOTLAND.—March 13.—For the works required in erection of the structural steelwork at the new electric generating station, Portobello, for the Edinburgh Corporation, all in accordance with relative plans, specifications, and conditions of contract. (Sir Alexander B. W. Kennedy, M.I.C.E., 17 Victoria Street, S.W., engineer.) Send £3 3*s*. deposit to Mr. J. A. Williamson, A.R.I.B.A., architect, Public Works Office, City Chambers, Edinburgh.

SCOTLAND.—March 18.—For the mason, carpenter, and slater works of repairs and additions to shepherd's house and offices at Glenturret, Roy Bridge, Inverness. Mr. Sweton Fraser, Estate Office, Gallovie, Kingussie.

SOUTHAMPTON.—March 7.—For alterations and additions to the Cowherds Inn, for the Corporation. Mr. R. R. Lenthorne, town clerk, Municipal Offices, Southampton.

SOWERBY BRIDGE.—March 20.—For supply and fixing of new windows, doors, eaves, troughs, &c., at the buildings and cottages; also repairing of the trolley bridge; also for the slating and plastering of the gable ends of the buildings, and also repairs where necessary to the cottages, for the Luddenden Foot Joint Sewerage Board. The Manager, High Royd, Sowerby Bridge.

WALES.—For alterations and additions to Abernant House, Aberdare, for the purpose of converting same into a cottage hospital. Deposit £3 3*s*. Mr. G. Kenshole, M.S.A., Station Road, Bargoed.

WEYMOUTH.—March 9.—For reslating main roof, painting and decorating work, &c., at the Sailors' Home-from-Home. The Quay. Messrs. S. Jackson & Sons, surveyors and architects, Bridge Chambers, Weymouth.

TENDERS.

IRELAND.

For the construction of the new drainage works at the Mullingar District Asylum.

McNally & Co.	£3,218 0 0
Mullally	2,823 7 0
Ross & Sons	2,711 6 10
John Ryan & Son	1,887 0 0
Granger Bros.	1,859 0 0
JOHN GRAHAM, Dromore, Co. Down (*accepted*)	1,595 0 0
Kearney	1,550 0 0

IRELAND.

For erection of dwellings and the execution of other works on the Ormond Market area, for the Dublin Corporation. The CITY ARCHITECT, Dublin.

	With Granite and Killaloe Slates.	With Granite and Welsh Slates.	With Limestone and Welsh Slates.	With Limestone and Killaloe Slates.
Thos. O'Mahony, Fermoy	£25,950 0 0	£25,940 0 0	£26,030 0 0	£26,040 0 0
J. & R. Thompson, Dublin	25,806 0 0	25,753 0 0	26,143 0 0	26,196 0 0
John Hearne & Son, Waterford	25,633 5 8	25,677 18 2	25,781 11 2	25,736 18 8
Louis Monks, Kingstown	24,631 10 5	24,631 10 5	25,122 15 8	25,122 15 8
Collen Bros., Ltd., Dublin	24,316 0 0	24,336 0 0	24,513 0 0	24,493 0 0
J. & W. Stewart, Dublin	23,962 0 0	23,917 7 6	24,261 4 0	24,305 16 6
W. Conolly & Son, Dublin	23,700 0 0	23,550 0 0	23,821 0 0	23,971 0 0
McLaughlin & Harvey, Dublin	23,675 0 0	23,629 0 0	23,849 0 0	23,895 0 0
James Clarke, Dublin	22,869 8 10	—	—	—
Meagher & Hayes, Cork	22,750 0 0	22,750 0 0	22,750 0 0	22,750 0 0
James Beckett, Dublin	22,500 0 0	22,537 10 0	22,764 10 0	22,727 0 0
Farmer Bros., Dublin	22,310 0 0	22,439 0 0	22,597 0 0	22,468 0 0
Municipal Workshops, Dublin	22,298 18 10	—	—	—
Thomas Mackey & Sons, Dublin	21,870 13 6	21,790 13 6	21,830 13 6	21,910 13 6
Alexander Hull & Co., Dublin	—	21,095 0 0	21,395 0 0	—
H. & J. MARTIN, LTD., Dublin	19,998 0 0	20,037 12 0	20,076 12 0	20,037 0 0

The tender submitted by Messrs. H. & J. Martin, Ltd., Dublin, was accepted at £20,037, which includes the use of Irish limestone and Killaloe slates.

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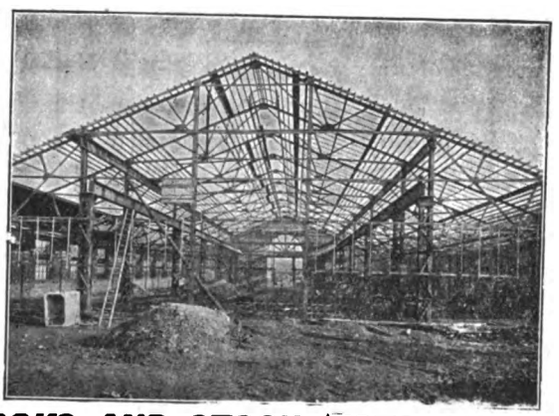
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THE AMERICAN GARDEN CITY.

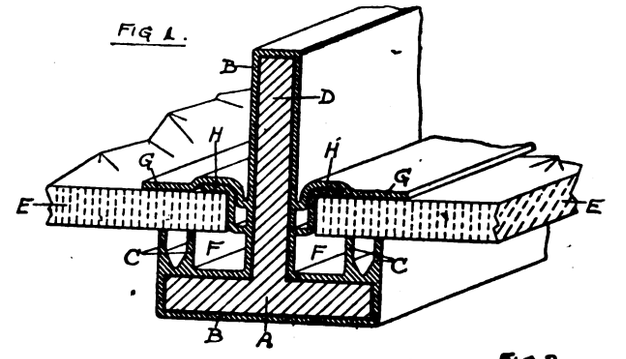
IN its architecture it is a revolt both against the cheap monotony of the long blocks of attached or semi-detached brick and frame houses of the humbler suburbs, and the architectural anarchy of more pretentious villadom, which is sometimes successful and sometimes runs into rococo and gingerbread. To build in accordance with one's tastes, and yet in conformity with a general plan of beauty and utility, is the lesson the garden city inculcates. When its example has found sufficient imitation on the part of private enterprise, and it is being imitated with the years, the toy-city will lose its air of make-believe. When we have grown accustomed to beauty we shall escape the first impression that a thing is unreal because it is so charming. Personally, my feeling is that the architects of the garden city ought not to go back so faithfully to four centuries ago and gabled roofs with Old English lettering on the inn-signs. To the irreverent it smacks a bit of Rathskeller architecture. I should like the architects to develop a beautiful domestic architecture out of modern conditions in so far as the thing can be done.—From "The City's Ragged Edges," in "Harper's Magazine" for February.

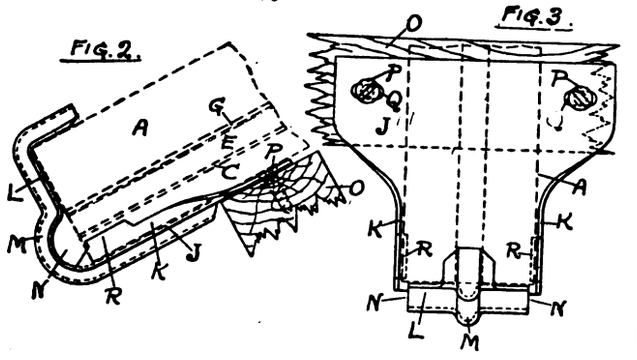
BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 10,356.—July 16, 1915.—Glazing Roofs and like Structures.—William Story, 15 Chapeltown Road, Leeds.—This invention relates to the glazing of roofs and like structures, more especially to the glazing of the type in which sheathed glazing bars are provided with side gutters or channels, on the edges or shoulders of which the glass is supported, side wings or flanges of





the sheath being employed to hold the glass in position and to make the necessary weather-tight joints between the glass and the bar. The object of this invention is to provide an improved form of weather-tight expansible joint between the edge of the glass and the central web of the glazing bar, characterised by a pair of side wings or flanges, projecting laterally at points approximately in line with the upper and lower edges respectively of the glass, being turned up one inside the other to form a double butt joint on each side of the bar before being turned over the upper edge of the glass and being rubbed down thereon one over the other in the usual way, said improved joint being especially adapted to a glazing bar supported at its lower ends by means of a bracket having a lateral adjustment, which permits of the bar being drawn up tight in a lateral direction after the glass has been fitted. Fig. 1 is a transverse sectional elevation of bar and joint complete. Fig. 2 is a side elevation of lateral adjusting bracket device for supporting the lower end of the glazing bar. Fig. 3 is a plan of Fig. 2. Fig. 1 is drawn to a larger scale than Figs. 2 and 3. A steel or other glazing bar A of a plain inverted T section is enclosed within a continuous leaden sheath B. A double outer shoulder C is formed integral with this leaden sheath, on each side of the central web D, to support the glass E and to keep the channels F dust-proof. The sheath B is also formed with leaden wings G projecting laterally in line approximately with the upper edge of the glass, and with smaller auxiliary wings H (Fig. 1) projecting laterally in line approximately with the lower edge of the glass, the said wings G and H, when turned up one inside the other, being adapted to form the desired weather-tight expansible double butt joint, with interposed air spaces, and being likewise formed integral with the leaden sheath. The bar A is supported and held in position at its lower end by means of a bracket J having upturned edges K, and having also an upturned terminal clip L engaging over the lower end of the bar; the upturned end of the bracket is also formed with a strengthening corrugation M, and with side drainage outlets N leading from the channels F in the bar. The upturned edges K of the bracket may also be slightly turned over at R to grip the edges of the bar A (or recesses cut therein) if desired. The bracket J is fixed to the roof purlins O by means of screws P passing through slotted screw-holes Q in the base of the bracket, and the glazing bar A is fixed at its upper end by means of a screw or the like. In applying the improved glazing, the first bracket J and glazing bar A are firmly fixed in position, with the second bracket and bar fitted loosely in their approximate position. The glass E is laid over the double leaden shoulders C, with the edges of the glass abutting loosely on each side against the upturned auxiliary leaden wings H, and the slots Q permit of the loose bar A being then drawn up tight (in a lateral direction), so that the double butt side joints on each edge of the glass are made waterproof, while at the same time allowing for expansion and contraction. The screw at the upper end of the bar is then fixed, and the loose outer screw P is then tightened up (the screw on the inner side of the bar being made nearly right in the first instance), and the leaden wings G and H are finally turned over the upper edges of the glass and rubbed down flat to complete the weatherproof joint and keep the channels clear. Jan. 13, 1916.

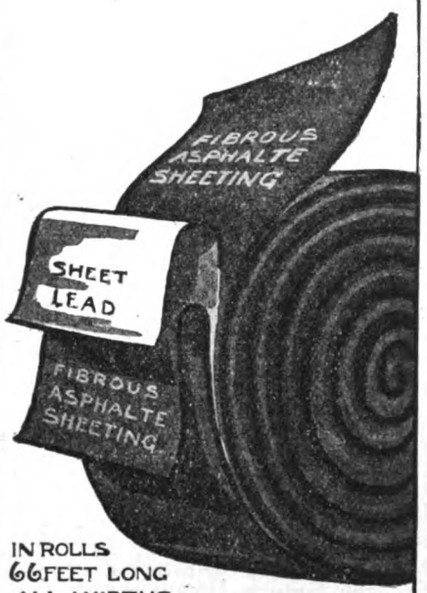
THE MAIN DRAINAGE OF CAIRO.

AT the ordinary meeting of the Institution of Civil Engineers, on Tuesday, February 22, a paper on the above subject was read by Mr. C. Carkeet James. The paper commenced with the history of the steps taken by the Egyptian Government for the drainage of Cairo from 1885 to 1906, and then described the scheme as subsequently designed and carried out by the author, and officially inaugurated by H.E. the Minister of Public Works on March 22, 1915.

The city of Cairo and suburbs, included in the scheme, covers an area of 7,538 acres. It is drained on the sectional and gravitation systems, the sectional portion using compressed-air ejectors. After giving details of the rainfall, water consumption, population, and sanitary conditions of the city, the paper dealt with the treatment of surface water for the whole city and suburbs, and described the machinery, ejectors, and mains installed for dealing with about nine million gallons per day.

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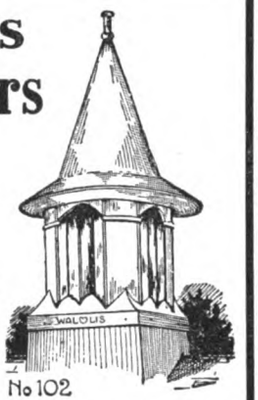
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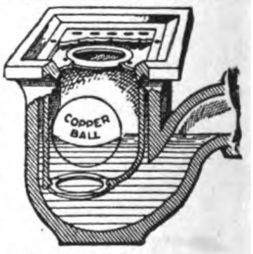
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Next, the sewer reticulation and the compressed-air system and its machinery were dealt with. Sixty-three ejectors in cast-iron tubbings have been sunk, with fifty miles of cast-iron air mains and sealed sewage mains. The air-compressing plant consists of four steam-driven compressors, each capable of compressing 1,770 cubic feet of free air per minute to a pressure of 22 to 25 lb. per square inch.

The main collector is 14,900 yards in length, 5 feet 3 inches in internal diameter, constructed in cement concrete, and laid with a gradient of 1 in 2,500. The construction of this collector, the plant used, and the methods and cost of unwatering the trenches were described.

The next section dealt with the screening chamber, sump and main pumping station at Kafr-el-Gamus, and gave details of their design and working. At Kafr-el-Gamus the sewage is received from the main collector and pumped to the purification works and farm at Gebel-el-Asfar. The construction of the sump was briefly touched upon. The pumps, boilers, &c., are designed to deliver 50 cubic metres (11,000 gallons) of sewage per minute against a head of 250 feet. The plant consists of four units, three of which are capable of dealing with the maximum flow. The pumps are of the triple-plunger type, and are placed immediately over the sump. Each steam engine develops 200 h.p. at a normal speed of twenty-two revolutions per minute, but is capable of developing 360 h.p. at the maximum speed of thirty-two revolutions per minute. The engines are arranged for quadruple expansion, and each has its own condenser placed under the engine floor.

The rising main is 36 inches in internal diameter, constructed of cast-iron, and 7¼ miles in length. The flow passing through this main is registered by a Venturi meter, and controlled at intervals by sluice and renux valves. A complete description of this main and of the testing of the pipes was given.

The purification works at Gebel-el-Asfar are designed to treat eleven million gallons per day through six hydrolytic tanks and eight continuous filter beds with storage tanks for holding up the night flow. A description of the method and results of treatment was given, and the necessary machinery for supplying the power needed for driving the pumps, distributors, and other mechanical appliances and for the lighting described. The plant consists of three semi-Diesel oil engines of 60 h.p., each direct coupled to 45-kilowatt dynamos, from which the electrical energy is transmitted to various points by overhead cables.

For the Gebel-el-Asfar farm about 3,000 acres of desert land has been reserved. The methods of irrigation and cultivation, and the earlier experiments carried out to decide upon the agricultural policy to be followed, were described, as well as the accommodation provided for the staff and farm labourers; and the prospects of the farm with regard to cultivation and returns were discussed. Owing to the absence of rain, desert land only requires continuous irrigation, and in the vicinity of a city such as Cairo it should prove very remunerative.

Finally the system of taxation to meet the cost of the drainage and the costs of the scheme were gone into.

BOYLE'S latest patent "Air-pump" ventilators have been adopted for the Council Schools, Resolven, Glam.

MESSRS. LLOYDS' new bank in Market Place, Durham, was opened for business last week. The main elevation is executed in stone from the Windy Nook quarry, above a base of polished granite, and the rear in deep red brick. A large banking hall occupies the ground floor, with suites of offices at the rear, while the whole of the first and part of the second floors have been arranged in well-lighted apartments. The residential part of the old bank has been converted into chambers. Mr. William Hall, of Gateshead, carried out the principal rebuilding work, under the supervision of Mr. J. G. Burrell, architect, of Durham, who prepared the plans.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 22,388. June 11, 1915.—M. J. Adams, Fireclay Works, Scotswood-on-Tyne. Urinals.

1,650. Feb. 2, 1915. (Dated under International Convention, Feb. 4, 1914.)—Jacob Hendrickson, Box 73, Rossland Kootenay, British Columbia. Permutation padlocks.

1,651. Feb. 2, 1915.—A. J. Roach-Cuming, 68 Cowcross Street, E.C. Door and door frame, particularly applicable to storage chambers and safes.

1,826. Feb. 4, 1915.—A. H. Curtis, Caramore, Chaucer Road, Bedford. Heating apparatus.

2,026. Feb. 8, 1915. (Dated under International Convention, Feb. 9, 1914.)—Louis Daumas, 30 rue Alsace Lorraine, Toulouse, France. Seat guards for water-closets.

4,257. March 18, 1915.—F. C. Woodford, 1 Ashdon Road, Harlesden. Composite roofings.

4,869. March 29, 1915.—G. E. Clare, 2 College Road, Harrow. Combination range for cottages and the like, applicable also for warming and ventilating the rooms thereof.

5,399. April 9, 1915.—A. E. C. Hammond, 58 High Street, Sidcup, Kent. Devices for preventing noise in water-supply pipes.

6,910. May 8, 1915.—J. D. Prior, Empire Works, Holliday Street, Birmingham. Domestic fireplaces.

8,099. June 1, 1915.—R. E. Taffinder, 18 Barkerend Road, Bradford. Means for adjusting the height of electric lamps.

10,334. July 15, 1915.—Michisuye Suwa, 16 Ginza-4 chome, Kyobashiku, Tokyo, Japan. Electric bells.

12,804. Sept. 7, 1915.—F. A. Stiers, 4,171 West Belle Place, St. Louis, Missouri, U.S.A. Street sprinklers.

14,501. Oct. 13, 1915.—Martin McDonald, 4,102 Kansas Avenue, Washington, D.C. Door knobs.

1,220. Jan. 26, 1915.—F. W. Edlin, 10 Stalmine Road, Walton, Liverpool. Construction of floors and the like.

1,532. Jan. 30, 1915.—Wilberforce Cobbett, 89 West Street, Fareham, Hants. Means and apparatus for the automatic discharge of sewage and liquids from tanks, sewers, or other receptacles.

2,210. Feb. 11, 1915.—P. B. Handley, 151½ High Street, Bordesley, Birmingham. Locks.

2,775. Feb. 20, 1915.—L. S. Hackney, Hackney Building, Corner 4th and Jackson Streets, St. Paul, Ramsey, Minn, U.S.A. Ventilating systems and apparatus therefor.

3,059. Feb. 25, 1915.—F. J. Hodges, 365 Spring Bank West, Kingston-upon-Hull. Accelerated circulating system for low pressure hot-water heating apparatus.

3,377. March 3, 1915.—Jane Lister, 88 Kirkmanshulme Lane, Longsight, Manchester. Screw socket or wall plug.

4,969. March 31, 1915.—Walter Jackson, 78 Church Lane, Moldgreen, Huddersfield. Chimney tops, ventilator tops, or the like.

8,974. June 18, 1915.—Evered & Co., Ltd., Surrey Works, Smethwick, Stafford, and J. C. Pizey, 58 Broadwater Road, Tottenham. Gas and liquid main cocks.

11,497. Aug. 9, 1915.—J. W. Cooper, Merino Downs, Ottago, N.Z. Apparatus for cutting trenches for drains and the like.

8,219. June 3, 1915.—G. St. J. Day, Mumps Electrical Works, Oldham, Lancs. Supporting means for lamp shades, globes, reflectors, or the like.

12,540. Sept. 1, 1915.—J. B. Hayward, Brunswick and Vulcan Works, Willenhall Road, Wolverhampton, and Chas. Shaw, 14 Princess Street, Wolverhampton. Fencing.

12,924. Sept. 9, 1915.—Geo. Pate and A. R. Wood, of Carron Co., Carron, Stirling. Electric heating apparatus.

13,613. Sept. 24, 1915.—Pennsylvania Wire Glass Co., 915 Pennsylvania Building, Philadelphia, U.S.A. Skylights.

14,122. Oct. 5, 1915.—H. R. Brain, 37 Orchard House, Blackwall, E. Tanks or the like for heating liquid.

Any of the above specifications may be obtained from J. D. Roots & Co.

H.M. ACTING TRADE COMMISSIONER in South Africa reports that the Municipality of Graaf Reinet, Cape Province, is commencing operations in connection with a scheme for providing the town with a domestic water supply system, and developing the existing system, and also installing an electric light system, erecting washhouses, and reconstructing streets. The carrying out of the entire scheme is estimated to cost about £50,000.

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FUNERAL OF THE LATE MR. H. L. FLORENCE.

AMIDST every token of sorrow and mourning the funeral took place on February 23 of the late Mr. Henry Louis Florence, of 9 Prince's Gate, S.W., and 16 Royal Crescent, Bath, who died at Bath after a short illness on February 17 in his seventy-fifth year, to the great sorrow of a large number of professional, Masonic, and City friends, by whom he was held in the highest regard and esteem. The remains were encased in a lead shell, which had an outer coffin of stout polished oak heavily panelled and bearing solid brass fittings and plate with the inscription. It was conveyed by train from Bath to Paddington Station, and thence by motor-hearse to All Saints' Church, Ennismore Gardens, where the first portion of the burial service was held, conducted by the Rev. W. E. Addis, the Vicar, assisted by the Rev. W. G. Walshe. The large assembly present included Mr. E. B. Florence (brother), Miss Florence (niece), Mr. H. S. E. Vanderpant (secretary to the deceased for over twenty-five years), the maids of deceased, Lord Sandhurst (treasurer of St. Bartholomew's Hospital), Mr. Samuel Bird (treasurer of Charing Cross Hospital), Sir Edward and Lady Letchworth, Sir Ernest Flower, Mr. E. T. Hall, F.R.I.B.A., Sir Walter R. Morgan, Mr. Richard Clowes (representing the Grand Lodge of England), Mr. H. Austen Hall, F.R.I.B.A. (President of the Architectural Association) and Mr. F. R. Yerbury (secretary of A.A.), Lady Eady and Miss Swinfen Eady, Mr. R. S. Balfour, Mr. H. Courthorpe Munroe, K.C., Mr. T. K. Crossfield, (W.M. of Westminster and Kensington Lodge No. 10, of which deceased was a past officer, and was also of the Carnarvon Mark Lodge), Mr. Pelham Lee, Mr. Sydney Lee, Mr. Thomas Hayes (clerk to the Governors of St. Bartholomew's), Miss MacIntosh (matron of St. Bartholomew's), Sir Roper Parkington, Mrs. Hornby Steer, Mr. E. Vaughan Morgan, Dr. Chappell, and many other friends. The Haberdashers' Company was represented by Mr. H. Sanders Clark (Third Warden), Dr. Walter Carr, Mr. H. Young, the Rev. J. L. E. Hooppell, Mr. J. E. Eagleton (clerk), Mr. R. J. Ellis, Mr. Henry Allen, &c. The Lord Mayor of London, Alderman Sir Charles Wakefield, was unavoidably unable to attend the service on account of the pressure of his official duties.

The interment was made in the family vault at Norwood Cemetery, where the wife of the late Mr. Florence was buried in April of 1877, several members of the family being buried in the vault.

VARIETIES.

THE Architectural Association announce that their address is now No. 37 Great South Street, Westminster, S.W.

MR. WILLIAM WOODWARD, F.R.I.B.A., who has undergone a serious operation, is reported to be making satisfactory progress.

MR. T. H. SMITH, architect and surveyor, 17 Basinghall Street, E.C., has prepared plans for the immediate rebuilding of 60-63 Aldermanbury as a six-storey office block.

THE Lord Provost's Committee of Edinburgh Town Council recommend that the monument to Alexander and Bucephalus, which stands in St. Andrew Square on the site that has been selected for the Gladstone Memorial, should be removed to the quadrangle of the City Chambers, Edinburgh.

THE Local Government Board has issued instructions to medical officers and sanitary inspectors intimating that the annual reports, with the usual elaborate table and statistics, are not to be printed this year. This official action is in pursuance of the policy of economy in public expenditure.

THE history and architecture of the Norman Priory Church of St. Bartholomew-the-Great, West Smithfield, will be explained to visitors on the last two Saturdays in March, the 18th and 25th. An organ recital will be given at two o'clock. All parts of the church will be opened to inspection free of charge, but a collection will be made for the restoration fund.

MR. HAROLD COX is to address the Institution of Civil Engineers next Tuesday, March 7, at 5.30 P.M., on "Industrial Development." In inviting Mr. Cox to address the Institution on this subject, the Council have considered that the present time calls for some earnest attention on the part of engineers to the economic issues which, after the war, must influence profoundly the future of engineering, as well as the industrial and commercial enterprises which are vital to its progress both in this country and abroad.

AT the annual general meeting of the Aberdeen Granite Association it was stated that in contrast to what was stated and expected in last report the number of men had been insufficient for the work that had come in. This had been particularly the case with polishers, so much so that female labour had been introduced by one firm. The prospects of trade in England were stated to be good, but the American and Canadian trade had suffered a collapse. Owing to the enlistment of workers and the prohibition of the importation of stones from Scandinavia there was a growing scarcity of granite.

THE business of Sir Arthur Blomfield & Sons, hitherto carried on by Captain Charles J. Blomfield and Mr. Arthur C. Blomfield, at 6 Montagu Place, Baker Street, W., was transferred on March 1 to the Eyre Estate Office, 125 Park Road, N.W. Captain Blomfield can also be communicated with at the headquarters of the Artists' Rifles, Duke's Road, Euston Road, W.C. (telephone Central 10814); and Mr. Arthur Blomfield, as before at the Architect's Office, Bank of England, E.C.

THE Local Government Board having declined to sanction the appointment of Mr. T. Woodruff as surveyor and sanitary inspector to the Dover Rural District Council, on the ground that he does not possess the Sanitary Institute certificate, four of the other candidates were invited to attend before the Council. Mr. N. Whitehead, who is forty-four years old, and has held a similar position for seventeen years under the Depwale Rural District Council, was appointed.

THE Manchester Town Hall Committee have appointed a sub-committee to consider the question of appointing a successor to the late Mr. Meade as city surveyor. As expenditure on public work is now so much restricted, the feeling of the committee is that it will be best, for the present at any rate, not to fill the vacancy. There is a deputy city surveyor in the Engineering Department and one in the Surveying Department.

THE Road Board have informed county authorities that, in view of the desire of the Minister of Munitions to encourage the use of refined tar so as to maintain the supply of distillation products for high explosives, and also with a view to protect important roads from disintegration, the Board have been authorised by the Treasury to make new grants and loans, to an aggregate amount of £200,000, towards the work of surface tarring, pitch grouting, and tar macadam.

THE new buildings of the Girls' Industrial School, Maryhill, Glasgow, were opened on the 26th ult. The buildings have been erected at a cost of £10,000 from plans prepared by Mr. Ninian Macwhannell, F.R.I.B.A., Glasgow. They form a three-storey block, situated between the existing main building and the recreation hall. The buildings are fully equipped, and a feature is a home for senior girls, provided with a separate entrance, having cubicles and sitting-rooms for each girl.

MRS. J. G. ORCHAR, the widow of Mr. J. G. Orchar, Broughty Ferry, died last week. By her death important bequests by her husband mature. Mr. Orchar directed his trustees on the death of his wife to erect a permanent building at Broughty Ferry, for the purposes of an art gallery, and to place in it his private collection of pictures, provision being also made for the earmarking of the revenue of certain feu-duties for the upkeep and maintenance of the building, with power to purchase additional works of art with any surplus available.

THE Board of Trade have issued the following: In connection with the prohibition of Import (paper, tobacco, furniture, woods, and stones) Proclamation, 1916, the President of the Board of Trade has appointed the following committee to grant licences in special circumstances for the importation of furniture, woods, hard woods, and veneers, and of stones and slates: Mr. J. H. Bovill (chairman), Mr. George Burt, J.P., Colonel G. T. V. Cobbett. Mr. H. J. Phillips, of the Board of Trade, will act as secretary to the committee, and all communications relating to the importation of furniture, woods, hard woods, and veneers, and of stones and slates, should be addressed to him at Gwydyr House, Whitehall, London, S.W. Importers of goods of these descriptions who may have cargoes at present en route for the United Kingdom are invited to make early application to the above address for licences, with a view to avoiding any unnecessary delay in clearing the goods on arrival.

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THE
Architect and Contract Reporter.
FRIDAY, MARCH 10, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITION OPEN.

DUBLIN.—The Senate of the National University of Ireland invites architects to submit designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2*s.* deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

BRADFORD.—March 11.—For fittings required in erection of the new branch library, Allerton, for the Corporation. The City Architect, Town Hall, Bradford.

BRIGHTON.—March 16.—The Commissioners of His Majesty's Works and Public Buildings are prepared to receive tenders for the execution of ordinary works and repairs to the buildings in their charge in the Brighton and Hove district during the period of one year from April 1, 1916. Deposit £1. H.M. Office of Works, &c., Storey's Gate, London, S.W.

CWM.—March 25.—For erection of a chapel at Cwm, Mon., for the Wesleyan Methodist Connexion. Mr. R. L. Roberts, M.S.A., Abercarn.

EDLINGTON.—For erection of a cinematograph theatre (1,000 seats), at the junction of King's Crescent and Edlington Lane, for the Edlington Empire Syndicate. Mr. D. Milne, A.R.I.B.A., 8 Priory Place, Doncaster.

DOVER.—March 17.—For the execution of ordinary works and repairs to the buildings in their charge at the Duke of York's School, Dover, during one year from April 1, for the Commissioners of His Majesty's Works and Public Buildings. Deposit £1. H.M. Office of Works, &c., Storey's Gate, S.W.

EXETER.—March 17.—For the execution of ordinary works and repairs to the buildings in their charge in the Exeter district during one year from April 1, for the Commissioners of His Majesty's Works and Public Buildings. Deposit £1. H.M. Office of Works, &c., Storey's Gate, S.W.

HARROGATE.—For the whole of the various works required in additions and alterations to the house and the erection of new garage at "The Old Parsonage," High Harrogate, for Mrs. A. Lawson. Messrs. Bown & Crosland, architects, 6 Princes Square, Harrogate.

IRELAND.—March 13.—For erection of new premises, for the "Anglo-Celt" Printing Works, Cavan. Mr. P. J. Brady, architect, Ballyhaise, Cavan.

LEEDS.—March 22.—For the execution of ordinary works and repairs to the buildings in their charge in the Leeds district during one year from April 1, for the Commissioners of H.M. Works and Public Buildings. Deposit £1. H.M. Office of Works, &c., Storey's Gate, S.W.

LISKEARD.—March 21.—For erection of a store in Castle Hill, for the Co-operative Society. Mr. J. R. Toms, secretary, the office, Lower Lux Street, Liskeard.

MARCH 15.—Tenders are required for repairs and materials for period of the triennial contract dating from March 31, 1916, to March 31, 1917, in the following engineer district of the command, "Fort-George District." Address of district engineer office, Cameron Barracks, Inverness. Forms of tender, conditions of contract, and all necessary information may be obtained up to March 11 upon application to the Engineer Office, 4 St. Leonard's Bank, Perth, by letter, addressed to the Commanding Royal Engineer.

RHYMNEY.—March 12.—For the altering, &c., of the "Windsor Arms," Butetown, Rhymney Bridge, Mon., for Messrs. A. Buchan & Co. The "Windsor Arms," Butetown, or Mr. T. Roderick, architect, Ashbrook House, Aberdare.

SALISBURY.—For proposed additions to the United Methodist Schools, Milford Street. Mr. Fred Bath, architect and surveyor, Salisbury.

SCOTLAND.—March 13.—The Edinburgh Corporation are prepared to receive tenders, in one undertaking, for the various works, excepting the structural steel work, required in the erection of the new electric generating station at Portobello. (Sir Alexander B. W. Kennedy, 17 Victoria Street, Westminster, S.W.) Send application and £3 3*s.* deposit to Mr. James A. Williamson, A.R.I.B.A., Public Works Office, City Chambers, Edinburgh.

SCOTLAND.—March 13.—For the works required in erection of the structural steelwork at the new electric generating station, Portobello, for the Edinburgh Corporation, all in accordance with relative plans, specifications, and conditions of contract. (Sir Alexander B. W. Kennedy, M.I.C.E., 17 Victoria Street, S.W., engineer.) Send £3 3*s.* deposit to Mr. J. A. Williamson, A.R.I.B.A., architect, Public Works Office, City Chambers, Edinburgh.

SCOTLAND.—March 15.—The Edinburgh Corporation are prepared to receive tenders in connection with the new electric generating station at Portobello in one undertaking, in respect of (1) building works, including mason and brick, carpenter and joiner, plumber, plaster and cement, glazier, asphalte and slater works; and (2) structural steel work. (Sir Alexander B. W. Kennedy, 17 Victoria Street, Westminster, S.W., engineer.) Send application and £3 3*s.* deposit to Mr. James A. Williamson, A.R.I.B.A., Public Works Office, City Chambers, Edinburgh.

SCOTLAND.—March 18.—For the mason, carpenter, and slater works of repairs and additions to shepherd's house and offices at Glenturret, Roy Bridge, Inverness. Mr. Sweton Fraser, Estate Office, Gallovie, Kingussie.

SCOTLAND.—March 18.—The Dundee School Board are prepared to receive tenders for the demolition of old school buildings adjoining Wallacetown Public School, Dundee, situated on the north side of Crescent Street, and the removal of all material and debris arising therefrom, the whole to be entirely demolished and removed not later than Tuesday, April 18. Mr. J. E. Williams, clerk of the Board, School Board Offices, Dundee.

SCOTLAND.—March 20.—For the work to be executed in the reconstruction of Slateford Station Buildings, Edinburgh, for the Caledonian Railway Company. Deposit £2 2*s.* The offices of the Company's Engineer, Buchanan Street Station, Glasgow, and the District Engineer, Princes Street Station, Edinburgh.

SHEFFIELD.—March 21.—For the supply of materials and works required in connection with erection of a transformer sub-station in Sidney Street, for the Electric Supply Committee. Deposit £1 1*s.* Mr. S. E. Fedden, general manager and engineer, Commercial Street, Sheffield.

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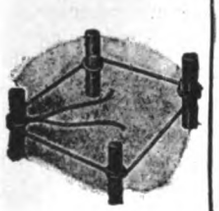
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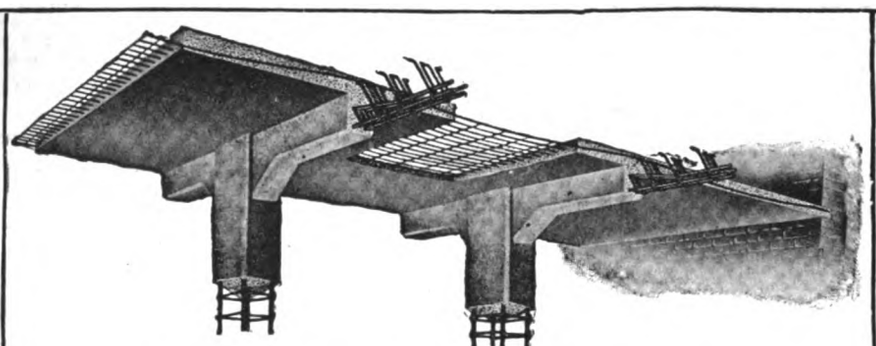
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SOWERBY BRIDGE.—March 20.—For supply and fixing of new windows, doors, eaves, troughs, &c., at the buildings and cottages; also repairing of the trolley bridge; also for the slating and plastering of the gable ends of the buildings, and also repairs where necessary to the cottages, for the Luddenden Foot Joint Sewerage Board. The Manager, High Royd, Sowerby Bridge.

STAINLAND (YORKS).—March 16.—For the various works required in the erection of an engine-house, together with engine bed and foundations, at Dog Lane Mills, for Messrs. Wm. Sugden & Sons. Mr. C. F. L. Horsfall, architect, Lord Street Chambers, Halifax.

TAUNTON.—March 21.—For new shop front and other alterations at No. 28 East Street, for the Taunton Co-operative and Industrial Society, Ltd. Mr. F. W. Roberts, F.R.I.B.A., 2 Hammet Street, Taunton.

WALES.—March 11.—For an addition to the bakery at Penygraig, for the Penygraig Co-operative Society. Mr. E. I. Evans, architect, Dunraven Chambers, Tonypandy.

WALLASEY.—March 18.—For erection of a small lean-to roof at the Corporation generating station, Lime Kiln Lane. The Electrical Engineer's Office, Seaview Road, Liscard, Wallasey.

TENDERS.

CASTLEFORD.

For alterations at the premises of the Castleford and Allerton Mutual Industrial Society, Ltd., Carlton Street. Mr. A. HARTLEY, architect, Castleford.

Accepted tenders.

R. Walker & Sons, builders.
G. E. Greaves, joiner.
S. Edison, slater.
Beighton & Robshaw, plasterers.
Sweeting & Sunderland, plumbers.
All of Castleford.

IRELAND.

The following tenders were received for painting work, repairs, &c., at the Crooksling Sanatorium, Brittas, for the Tuberculosis Committee of the Dublin Corporation:—

O'Neill & Son	£827	0	0
Dockrell, Sons & Co.	600	0	0
Keatinge & Son	542	10	0
Municipal Workshops, Dublin	456	0	0

LONDON.

For the foundation and building work for the King's Road electricity station extensions, for the St. Pancras Borough Council.

W. DOWNS, LTD., Hampton Street, Walworth Road, S.E. (*recommended*).

PRUDENTIAL ASSURANCE COMPANY.

AT the annual meeting of this company last week there was an even more than usually astounding group of figures to present to the shareholders. As the chairman, Mr. Thomas C. Dewey, remarked, the results would have been amazing if the year 1915 had been a year of peace, but when one considers the number of unusual calls upon the public they are still more extraordinary.

The total assets as shown by the balance sheet are £94,794,798, being an increase of £3,592,454 over last year. The total income of the company during the past year was £17,831,590, an increase of £635,502 over that of the previous year, and of £1,263,981 over that for 1913. Of this amount £3,677,559 came from interest and dividends, and £13,672,644 from premiums. The interest and dividends were £107,666 in excess of those for 1914. It is, however, to the increase in the premiums received in the industrial branch to which particular attention should be directed. In 1914 the premiums received amounted to £8,176,202, an increase of £301,746. In 1915 the premiums received amounted to no less than £8,506,063, which is an increase of £329,861. That is to say, in spite of the country being engaged in hostilities for the whole of the twelve months the company has for two successive years secured a record premium increase. The number of industrial policies in force has been increased during the past year by 774,877 to 20,859,887, assuring £276,402,265 exclusive of bonus; the average duration of these policies exceeds thirteen years.

In the ordinary branch the number of policies issued was 68,785, assuring £6,619,218, and producing a new annual premium income of £457,217. This is an increase of 3,034 in the number of policies, £300,375 in the sums assured, and £32,864 in new premiums, over the new business for 1914. Business in policies for £500 and upwards still continues to increase, and during last year exceeded £1,100,000 in new assurances. The premiums received in the ordinary branch during the year were £5,157,516, being an increase of £121,891 over the year 1914. The total sum assured under the 935,514 policies in force at the end of the year was £104,336,208. The claims in both branches for the year have been very heavy, amounting in all to £8,269,363, of which more than £5,000,000 was due to claims by death. The war claims for the year amounted to £571,035; these claims were on comparatively young lives, and in consequence involved a heavy loss. In addition, quite apart from the war claims, the mortality amongst the general population was heavy for a considerable portion of the year. As the Prudential policy-holders are representative of the whole of the kingdom, heavier claims on the company are always coincident with an increased death-rate among the general population.

At the commencement of hostilities the directors decided that no additional premium should be charged for the extra war risk on existing policies, excepting for those on the lives of officers and men of the Regular Army, and that these assurances should be free up to £250. The value of this concession may be gauged by the fact that since the commencement of hostilities war claims exceeding three-quarters of a million pounds have been paid, or a weekly average of over 500 claims for about £10,000. Of the amount paid £113,366 was due to naval casualties, £627,750 to deaths in the Army, £19,534 to frightfulness, including that most inhuman of outrages, the sinking of the *Lusitania*, and 2,815 to Zeppelin raids and the coast bombardments. So far as financial help can alleviate the suffering caused by the war the Chairman very rightly claimed that the Prudential has worthily upheld its traditions.

The balance-sheet includes amounts totalling over £13,000,000 in War Loan and Treasury bills. The increase in the holding of British Government securities compared with last year is £11,849,133, against a decrease of £8,276,885 in the balance-sheet item "railway and other debentures, and debenture stocks and gold and sterling bonds—home and foreign." Apart from the purchase of 4½ per cent. War Loan this is principally due to the sale to the Government in July last of the whole of the Company's holding of United States securities. This latter action won the warm thanks of Mr. McKenna, who, in a letter, stated that the Prudential in placing their American securities at the disposal of the Treasury at a fair and reasonable rate had considerably facilitated exchange operations, and "that the greatest credit is due to the company for its prompt action."

The short account we give above of the year's work will be sufficient to indicate why Mr. Dewey was able to say he had never known a report of which he was more proud than the latest one.

CORRECTION.—In our account of the funeral at Norwood Cemetery of the late Mr. H. L. Florence, F.R.I.B.A., it was stated that the remains were interred in the family vault where his wife was buried in 1877 together with several members of the family. Mr. Florence never married. The word "mother" should be read instead of "wife."

THE Wirksworth church authorities have decided to insure the fabric against hostile aircraft for £25,000. The officials of the Land Valuation Department recently fixed the value of the church, including its historical associations, at £40,000.

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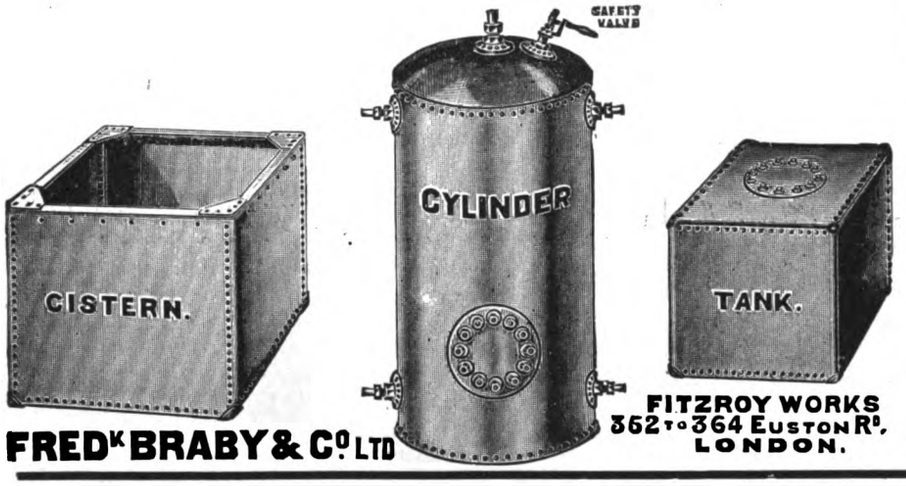
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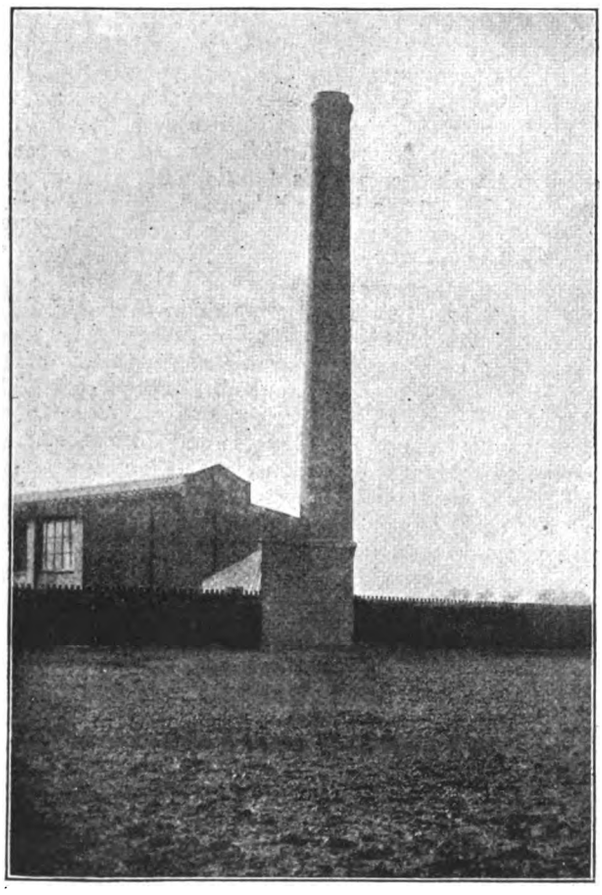
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HOUSING AFTER THE WAR.

ON Saturday, March 4, a meeting of the South Western Centre of the Sanitary Inspectors' Association was held in Bristol, and Mr. George Gibson, of Radstock, the new president, gave an address.

In discussing the question, "What After the War?" he read an interesting paper on the housing question as it would then present itself. The speaker quoted from a book written by Dr. W. G. Savage, the Somerset medical officer, to show how in former times a high poor rate checked the provision of adequate housing for the working classes, and he asked, if this were so, what sort of evils are to be anticipated from the economic effects of a war which will have bled Great Britain white, and placed upon her an intolerable financial burden? In discussing the position that would arise, he continued: With respect to housing, we have unfortunately no up-to-date statistics, but I venture to say that, except in munition districts or from some special cause connected with the war, your experience will confirm the fact, that from one end of the country to the other house-building is as dead as the proverbial tenpenny nail. It is true, also, that the destructive hand of the local authority has been stopped from closing and demolishing the dog-kennel kind of hovel, so familiar to us all.

We may take it, therefore, that at least the same shortage of houses will exist after the war as undoubtedly existed before it, for some of the houses were in such a precarious condition that the walls, even though they were continuously papered inside and bituminised outside, will crumble away before the end of the war. That the shortage of houses did exist before the war cannot be gainsaid, nor that the quality and type of house were equally bad for the health of the occupiers and called for energetic treatment cannot be denied. Dr. Savage found in 1913, in the county of Somerset, that of fifty-eight people living in thirty houses with only one bedroom each, thirty persons were suffering from pulmonary tuberculosis, or 51.7 per cent. of the inhabitants, whereas of 109 persons resident in twenty-one houses, with over four bedrooms, there were only twenty-one cases, or just over 5 per cent. of the occupiers. Again, in the Metropolitan Borough of Finsbury the rate of infant mortality was found in 1905 to be 200 per thousand in children born in houses of one room, against 100 per thousand in children born in houses with four rooms and upwards. To build up, therefore, a new and healthy population to replace the victims of the war well-constructed houses will be one of the first and crying needs.

What will be the greatest obstacles in the way of supplying these needs, and in what way will these be best overcome? First there will be the economic difficulty, scarcity of labour, scarcity of materials, scarcity and dearness of money. According to Rea, the ratio of labour to materials in a brick-built house is as forty-seven to fifty-three. After the war, in consequence of the shortage of men, labour will maintain a much higher rate of pay than in former times, and I think that we may safely say that in the country districts the 4*d*. an hour man will be able to secure 6*d*. an hour, and the 8*d*. an hour artisan will obtain 10*d*. an hour. Taking as an example of the effects the case of a brick- and slate-built house, costing £300 before the war, we shall find:—

		Increase
Unskilled labour, 8 per cent. of cost	**£24 0 0**	**£12 0 0**
Bricklayer and slater, 12 per cent. of cost ...	**36 0 0**	**9 0 0**
Carpenter and joiner, 20 per cent. of cost ...	**60 0 0**	**15 0 0**
All other skilled trades, 7 per cent. of cost ...	**21 0 0**	**5 5 0**

This shows an increase for labour only of £41 5*s*.

While building materials will not remain at the present war prices, it is safe to say that, with the great demand that there will be upon them for re-building Belgium and France, and let us hope Austria and Germany too, the cost will be fully 20 per cent. above pre-war days. This means that for our illustration the cost will be increased from £159 to £190 15*s*. The total increase on the cost of the house will be £73. With gilt-edged securities so cheap, no private investor will want to see less than 7 per cent. for his money, which will mean, say, £26 per year for the house. Landlords have been previously content with 6 per cent., and on the lower cost of the house this would have meant £18 a year rent. Or, again, take the case of local authorities building workmen's cottages at £200 each. They will have to face the *pro rata* cost of production, say, in round figures, £50 each. No loans will in an ordinary way be obtainable at less than 5 per cent., whereas before the war they were freely obtainable at 3½ per cent. The interest will therefore be increased from £7 to £12 10*s*. per year, which will mean at least 2*s*. per week on the rent. Of course, labour being better paid will be able to pay more rent, but 2*s*. a week to a man earning 24*s*. per week will be a real burden.

To surmount these obstacles I suggest first of all a radical alteration of the by-laws relating to the construction of dwellings. I do not want to see any alteration made in the by-laws as to the sufficiency of air space, ventilation, ratio of window area to floor area, or construction of drainage. The by-laws requiring new streets to be 36 feet in width, treble that of some old highways and double that of many main roads, might well be altered to save the cost of land and expense in the construction of the roads, and the by-laws as to the thickness of walls and the class of building materials used might, so far as buildings in the country districts are concerned, be safely relaxed. The early part of my professional training was obtained thirty-five years ago, with one of the divisional engineers of the New York and Lake Erie Railway. In those days we used to build workmen's dwellings on brick footings, timber framed, weather boarded on the outside, and with shingles on the roof. This class of house, with the cheap timber we had at hand, could be constructed at an almost nominal price, and it provided a very comfortable dwelling. I realise, of course, that for a long time after the war timber will be very dear, but I think that the by-laws might safely be watered down sufficiently to allow us to build upon stone, brick, or concrete foundations timber-framed houses, and to cover the sides and roof in with some form of the excellent asbestos preparations that there are now on the market, and the danger from fire would be very little. This type of house I calculate could be put up after the war at a cost of £150 each, for a workman's cottage, and would, bar accident, stand for at least sixty years, which would probably tide this country through the devastating effects of this great war.

Coming now to the consideration of the alterations to be made in the financing of housing schemes, I observe that the war has flung to the winds the doctrine that the State must not interfere with private enterprise. Dislike Socialism as much as we will, we must confess that private ownership has been thrust into a corner, and that the Government takes exactly what it wants, when it wants it, and at its own price. The State, then, must after the war provide, through the local authorities, a sufficiency of houses for re-housing its population upon a hygienic basis, and money must be lent by the Government, at less than it will cost for this important work. If the alterations I have suggested are made, then I believe that there will be a better condition of housing prevailing after than before the war, and the nation will reap all the advantages good housing brings in its train—less drunkenness, less immorality, less sickness, less suffering and misery, and prolonged life and happiness for the people.

MAJOR LOUIS A. NEWTON, C.C., who has practised as a surveyor in the City of London for over twenty-five years, is a candidate for the office of Sheriff at the election to be held on Midsummer Day next. He has been on the Court of Common Council for eleven years, and has worked on various committees. At the present time he is chairman of the City of London Schools Committee.

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THE GARDEN CITIES AND TOWN PLANNING ASSOCIATION.

THE question of the settlement of discharged sailors and soldiers upon the land which is recommended by the recent Departmental Committee's Report will be dealt with at the annual meeting of the Garden Cities and Town Planning Association, which will be held at the Mansion House on Wednesday afternoon, March 22. The Lord Mayor will preside, and among those taking part will be the Marquis of Salisbury, the President of the Association, and the Earl of Selborne, the President of the Board of Agriculture, who will deal with the proposals in the report. It is also hoped that a prominent sailor and soldier will speak from the point of view of the Services.

The formation of garden villages, with the idea of a more general distribution of the population upon the soil, has been one of the chief aims of the Association since its foundation, and at the outbreak of war a special committee was at work with the idea of establishing a small holdings colony.

The Association has offered its assistance to the Board of Agriculture in regard to the proposals, and the experience which has been gained in the development of the estates which have been developed will doubtless be of assistance.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 2,257. Feb. 12, 1915.—Samuel Ingham, 51 Tithebarn Road, Southport. Military huts, bungalows, and other buildings and structures.

2,498. Feb. 16, 1915.—J. H. Windemuller, 54 Van Bleyswykstraat, The Hague. Gas burners.

7,204. May 13, 1915.—H. H. Thompson, 12 Carteret Street, Queen Anne's Gate, S.W. Reinforced-concrete construction.

11,844. Aug. 17, 1915.—Arthur Benham, Benhilton, Westbury Road, New Malden, Surrey, and T. F. Smith, 88 Church Road, Hanwell, W. Reinforced concrete.

Any of the above specifications may be obtained from J. D. Roots & Co.

VARIETIES.

THE Woods and Stones Licensing Committee give notice that all consignments of furniture, woods, hard woods, and veneers, and of stones and slates, which can be proved to have been despatched to the consignees from the place of origin on or before February 15, will be allowed to be imported on arrival in this country.

THE Manchester City Council were informed last week that their Electricity Committee had been unable to entertain a proposal to supply the amount of electric current required by certain very large works which it had been proposed to set up in Manchester. These works would have been established in Manchester if the committee could have promised the requisite supply, but this they could not do without jeopardising the interests of the present users of electricity for lighting and power purposes.

THE 1916 edition of "A List of English Clubs" (published by Messrs. Spottiswoode & Co., Ltd., New Street Square, E.C.), gives particulars of more than 4,000 clubs in all parts of the world. Elaborate care has obviously been taken in the gathering of information. In a spirit of optimism Mr. E. C. Austen Leigh, M.A., the editor, has retained the list of clubs frequented in happier days by the English in Belgium. He has excluded those of enemy countries. The only noticeable failure occurs under "Siberia" and "Dutch East Indies," where in both cases the usual concise information is not forthcoming as to fees, membership, address, and secretary.

MR. RICHARD OLIVER HESLOP, head of the firm of R. O. Heslop & Son, iron and steel plate merchants, and a well-known authority on Northumbrian literature, antiquities, and folk lore, died last week at Newcastle, at the age of seventy-four. Mr. Heslop was at business as usual on Thursday, and was there taken suddenly ill, and he died without regaining consciousness. Mr. Heslop was vice-president and a former secretary of the Newcastle Society of Antiquaries, and a Fellow of the Society of Antiquaries, London. He was for over twenty years secretary of the Durham and Northumberland Architectural and Archæological Society.

THE annual general meeting of the Glasgow Institute of Architects was held on the 1st inst. in the rooms, 39 Elmbank Crescent, Glasgow, Mr. John Watson, F.R.I.B.A., president, in the chair. The secretary (Mr. C. J. MacLean) submitted the report of the council, from which it appeared that the membership now stands at 108 fellows, seventy-two associate members, and forty-five lay and student members. Details were given of the various subjects that had engaged attention during the year. The report and financial statement were adopted. In view of circumstances arising out of the war the council was re-elected for another year, and as several members of council are on service it was remitted to the council to co-opt four additional members.

THE third annual general meeting of the Faculty of Surveyors of Scotland was held at 117 George Street, Edinburgh. Mr. A. K. Smith, president of the Faculty, presided. The annual report and accounts were adopted. Mr. William Edward Gardner, Edinburgh, Mr. John W. Gibson, Edinburgh, and Mr. William Salmond, Dundee, were elected fellows. The following office-bearers were elected: President, Mr. John Baxter, 243 St. Vincent Street, Glasgow; vice-president, Mr. Thomas Fairbairn, 53 Queen Street, Edinburgh; secretary and treasurer, Mr. William Johnstone, writer, 150 St. Vincent Street, Glasgow; general council (new members), Mr. Archibald Anderson, Mr. James G. Renwick, and Mr. William Ward (Glasgow), and Mr. George M. Mitchell and Mr. A. K. Smith (Edinburgh).

IN a recent lecture on economy in coal consumption, given at the Royal Institution, Dr. William A. Bone, F.R.S., Professor of Chemical Technology at the Imperial College of Science and Technology, said that "the continued use of more than 30,000,000 tons of raw coal, instead of coke, semi-coke, or gas, as domestic fuel, means that we are deliberately sacrificing, for the sake of a big blaze in the fire-place, the whole of the ammonia, tar, benzol, naphtha, and other by-products, the value of which would in the aggregate amount to many millions of pounds per annum, and at the same time we are unnecessarily adding to the atmospheric pollution of our great towns and cities by the smoke which goes up our chimneys." The Professor then pointed out how misguided such selfishness is, in view of the fact that the modern gas fire is now highly efficient, both in regard to its heating capacity and its labour-saving qualities, and from the hygienic point of view; while if for continuous use gas is considered too expensive a heating agent (and is not in any particular case accompanied by the compensating saving in labour and other household expenses that make its continuous use an economy in very many instances), coke, a solid smokeless fuel, can equally well be substituted for coal, and at a less cost.

TRADE NOTES.

IN order to ensure the rough-casting and flat roofs of the kennels of the Royal (Dick) Veterinary College, Summerhall, Edinburgh, being made permanently watertight, we hear the powder Pudlo has been employed with good results. The south wall of Killegney (Ireland) Church which has for many years been an eyesore owing to dampness, has now been made watertight with Pudloed cement.

MESSRS. MELVILLE, DUNDAS & WHITSON, of 93 West George Street, Glasgow, are reinforced-concrete engineers and contractors with a reputation which has travelled well beyond their native city. In our illustrations on loose paper we this week show one of their smaller recent contracts—viz., "Glenhead," Lenzie, where they were responsible for the fireproof flooring under the direction of Mr. William B. Whitie, F.R.I.B.A. But, of course, most of their work is on a bigger scale than in this pleasing Scottish residence. A recent list includes such names as the City Hall, Perth; Mitchell Library, Glasgow; new works at Wolverhampton for Messrs. McFarlane & Robinson; Glasgow Municipal Buildings extension; Glasgow Royal Infirmary reconstruction; stationery warehouse at Newcastle for Messrs. W. H. Smith & Sons. Messrs. Melville, Dundas & Whitson emphasise their facilities for good workmanship and quick workmanship.

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THE
Architect and Contract Reporter.
FRIDAY, MARCH 17, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITION OPEN.

DUBLIN.—The Senate of the National University of Ireland invites architects to submit designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2s. deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

ASPATRIA.—March 23.—For various works required in additions to the butcher's department of the premises of the Aspatria Industrial Co-operative Society, Ltd. Messrs. W. G. Scott & Co., architects and surveyors, Workington.

BRADFORD.—March 21.—For temporary store sheds at St. James's Market and Bolton Lane abattoirs, for the Corporation. The City Architect, Town Hall, Bradford.

CHYVERTON-IN-PERRANZABULOE (CORNWALL).—March 20.—For providing new sanitary accommodation, water supply, and other work at Chyverton-in-Perranzabuloe, Cornwall, for Captain T. Peter. Mr. A. J. Cornelius, M.S.A., architect and surveyor, Truro.

CWM.—March 25.—For erection of a chapel at Cwm, Mon., for the Wesleyan Methodist Connexion. Mr. R. L. Roberts, M.S.A., Abercarn.

GRASSINGTON.—For the various works required in erection of a branch shop at Grassington, for the Skipton Co-operative Society, Ltd. Mr. James Hartley, architect, Skipton.

HAYES.—April 1.—For erection of fifty-two workmen's dwellings, the laying out of the site, and construction of fences, paths, drains, &c., for the Urban District Council. Deposit £5 5s. Mr. D. C. Fidler, architect and surveyor, Council's Offices, Grange Road, Hayes End, Middlesex.

LEEDS.—March 22.—For the execution of ordinary works and repairs to the buildings in their charge in the Leeds district during one year from April 1, for the Commissioners of H.M. Works and Public Buildings. Deposit £1. H.M. Office of Works, &c., Storey's Gate, S.W.

LISKEARD.—March 21.—For erection of a store in Castle Hill, for the Co-operative Society. Mr. J. R. Toms, secretary, the office, Lower Lux Street, Liskeard.

MANCHESTER.—March 21.—For erection of cubicles for nurses at the Withington institution, Nell Lane, West Didsbury, near Manchester, for the Guardians of Manchester Union. The Master at the Institution.

MORLEY. — March 27. — For bricklayers', joiners', plumbers', plasterers', and slaters' work required in re-erection (after fire) of three-storey mill premises at Deanfield Mills, for Mr. James Barker. Mr. T. A. Buttery, Licentiate R.I.B.A., architect and surveyor, Queen Street, Morley, and Leeds.

RHYMNEY.—March 25.—For certain alterations to the cellars at the brewery, Rhymney, for Messrs. A. Buchan & Co. Mr. T. Roderick, architect, Ashbrook House, Aberdare, or Mr. G. L. Pares, the Brewery, Rhymney, Mon.

SCOTLAND.—March 18.—For the mason, carpenter, and slater works of repairs and additions to shepherd's house and offices at Glenturret, Roy Bridge, Inverness. Mr. Sweton Fraser, Estate Office, Gallovie, Kingussie.

SCOTLAND.—March 25.—For the removal of the composite wood and iron school building from Morgan Street and its re-erection on a site at Wallacetown Public School, and also for mason work, smith work, and painter work in connection therewith, for the Dundee School Board. Mr. J. E. Williams, clerk, School Board Offices, Dundee.

SHEFFIELD.—March 21.—For the supply of materials and works required in connection with erection of a transformer sub-station in Sidney Street, for the Electric Supply Committee. Deposit £1 1s. Mr. S. E. Fedden, general manager and engineer, Commercial Street, Sheffield.

SOUTH SOLE (KENT).—For erection and completion of a small house at South Sole, about one mile from Harvel Hill and three miles from Meopham Station, for Sergt.-Major Fogarty, R.F.A. Mr. F. Howarth, architect, Towyn, S.O., Merioneth.

SOWERBY BRIDGE.—March 20.—For supply and fixing of new windows, doors, eaves, troughs, &c., at the buildings and cottages; also repairing of the trolley bridge; also for the slating and plastering of the gable ends of the buildings, and also repairs where necessary to the cottages, for the Luddenden Foot Joint Sewerage Board. The Manager, High Royd, Sowerby Bridge.

SUFFOLK.—For repairs, &c., at the following Council schools, for the West Suffolk Education Committee: Assington, Barton Mills, Brandon infants', Brockley, Fornham All Saints, Glemsford, Great Cornard, Hundon, Mildenhall Beck Row, Fen infants', Kenny Hill, West Row, Newmarket Exning, Semer, Stansfield, Walsham-le-Willows infants', Whepstead, Wixoe, Wickhambrook. Mr. A. A. Hunt, county architect, 51 Abbeygate Street, Bury St. Edmunds.

TAUNTON.—March 21.—For new shop front and other alterations at No. 28 East Street, for the Taunton Co-operative and Industrial Society, Ltd. Mr. F. W. Roberts, F.R.I.B.A., 2 Hammet Street, Taunton.

WALES.—For erection of a pair of cottages at Southerndown Road Station, for the Barry Railway Company. Charge 5s. Engineer's Office, Barry Dock.

WALLASEY.—March 18.—For erection of a small lean-to roof at the Corporation generating station, Lime Kiln Lane. The Electrical Engineer's Office, Seaview Road, Liscard, Wallasey.

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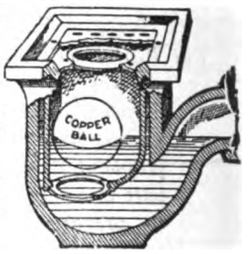
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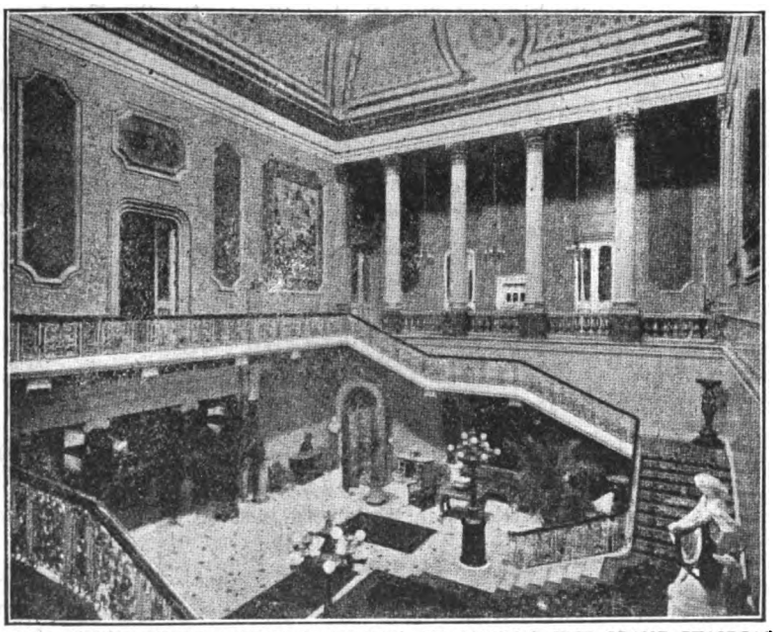
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THE ACTIVATED SLUDGE PROCESS OF SEWAGE PURIFICATION.*

By Professor G. J. FOWLER, D.Sc., F.I.C.

THE activated sludge process of sewage purification may be described as a process of intensive bacterial oxidation. In an ordinary sewage filter, the sewage passes in thin films in presence of air over surfaces coated with an active bacterial deposit. Costly surfaces are thus required, aeration is by no means perfect, and surface action is limited. In the activated sludge tank the bacterial sludge, which is built up in the sewage by processes similar in principle to the formation of the active bacterial deposit in the filter medium, is thoroughly intermixed with the sewage by means of air in a fine state of division. Thus practically infinite surface is obtained, which is continually being renewed, and consequently the conditions for bacterial oxidation approach theoretical perfection. This is the principle which differentiates the activated sludge process from all other processes of aeration which have previously been attempted.

The novelty and practicability of this principle is clearly evidenced by the very large number of centres, both in this country and in the United States, where experiments have been begun since the publication of the Manchester researches. In no case has any failure been reported.

In the present paper an attempt will be made to summarise the results so far obtained, in the first place, with regard to the scientific understanding of the process, and, secondly, in regard to large scale applications. Finally an indication will be given of probable future developments.

We are indebted primarily to Messrs. Ardern & Lockett for their extremely careful working out of the general idea given them by the present writer. It is a matter for congratulation that the further the researches of others have gone, the more Messrs. Ardern & Lockett's results are confirmed; in fact, inasmuch as their work has in the main been carried out with the particularly difficult sewage of Davyhulme, containing, as it does, inhibitory trade effluents, their conclusions have erred, if at all, on the conservative side. Thus working with domestic sewage recently, Mr. Ardern has found (and his results have been confirmed by other observers, notably Dr. Bartow, of Illinois) that it is not necessary to push purification to the point of nitrification in order continuously to obtain stable effluents.

The earlier experiments of the present writer and Mr. (now Major) Mumford on the specific action of the bacillus termed M7, which has the property of precipitating hydrated oxide of iron from solutions containing salts of iron together with organic matter, find their place in the general scientific theory of the activated sludge process. Dr. Bartow and Mr. W. D. Hatfield, of the University of Illinois, have done valuable work on the agricultural value of activated sludge.

The bacteriological properties of the sludge were investigated by Dr. Bartow and Mr. Robbins Russell. Their provisional hypothesis, that the activity of a species of worm, Aeolosoma Hemprichi, was an essential, they have given up as untenable.

With the assistance of a grant from the Board of Agriculture, Mrs. Gladys Mumford, M.Sc. (whose husband, Major Mumford, is now in the trenches), is collaborating with the present writer in paying special attention to the properties, physical, chemical, and bacterial, of activated sludge, with special reference to its value as a fertiliser.

It is now possible to correlate the various results which have been obtained, and to get some steps nearer to a proper understanding of the activated sludge process. The writer's present view is that it can be referred entirely to bacterial activity. It was distinctly stated, in the first paper by Messrs. Ardern & Lockett, that this sludge did not contain any algal growths; the process thus differs essentially from that described in the annual report of the Massachusetts State Board of Health for 1913, page 289 and seq.

It would appear that the activated sludge process consists broadly of three operations: a clotting or clarifying action; a rapid carbon oxidation process; and, finally, nitrification. It is probable that the first process is, to some extent, the result of the activity of organisms similar in character to "M7," which was definitely shown to depend on enzymic action, whereby traces of iron appeared to start the flocculation of the whole sewage. The "M7" bacillus is probably fairly ubiquitous, as it has been found that sewage containing iron and a certain amount of partially activated sludge, but in which clarification has not been effected, can be made to clarify almost at once by the addition of a small quantity of properly activated sludge. The mechanical and absorptive effect of a large mass of flocculent material must, of course, also greatly assist clarification, once a fair quantity of sludge has accumulated. Simultaneously with clarification the organic matters in solution follow the usual course of oxidation, which takes place rapidly owing to the enormously extended area of bacterial activity. In the writer's opinion, the outstanding advantage of the process lies in the fact that the sewage is really clarified and the process of clarification results in the precipitation of the emulsified nitrogenous matter in the sewage. This has hitherto not been arrested in any other process of tank treatment, with the possible exception of certain precipitation processes which involve the addition of large quantities of costly and inert chemicals.

Experiment has shown that bacterially precipitated sludge is quite extraordinarily active as a manure. Dr. Bartow and Mr. Hatfield have published photographs of comparative pot cultures in pure sea sand to which the same amount of plant foods except nitrogen had been added. These show that with wheat activated sludge gave better results than such nitrogenous fertilisers as dried blood, nitrate of soda, sulphate of ammonia, and gluten meal.

Similar results were obtained with radishes. Mrs. Mumford has obtained excellent results with clover and radishes, and also with flowering plants such as lilies and chrysanthemums. It is interesting to note that, according to Dr. Bartow, the results differed but little between activated sludge which had been treated with ligroin to remove grease and activated sludge which had not been so treated.

The amount of fatty matter present in the activated sludge is therefore not of serious moment from the agricultural point of view, though from trials which have been made in Chicago with activated sludge from Milwaukee it appears that in certain cases it may be possibly worth extraction for its own sake.

Apart from the high percentage of the nitrogen in

* A Paper read before the Institute of Sanitary Engineers, at Caxton Hall, Westminster, on February 2, Mr. S. A. Self (Chairman of Council) in the chair.

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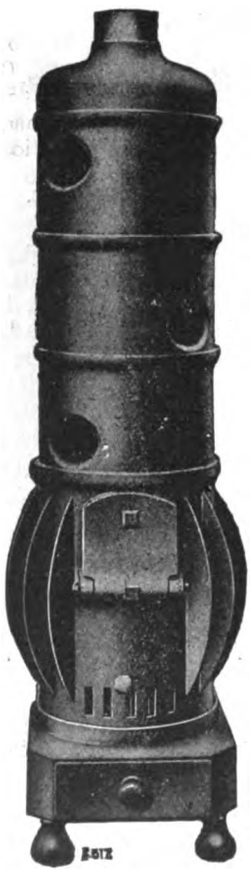
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activated sludge (varying according to the sewage from 4 per cent. to 6 per cent), its availability is of great importance.

Dr. Bartow has investigated this point on lines suggested by Burgess and Lipman, and finds that the nitrogen in the activated sludge is transformed into nitrate at about the same rate as such organic fertilisers as fish guano. This point is receiving careful attention by Mrs. Mumford and the present writer. The results obtained are not yet ripe for publication, but it would seem pretty certain that in the preparation of the sludge for transport as a fertiliser it will be necessary to be careful to adopt drying processes which alter the bacteriological and physical character of the material as little as possible. Activated sludge which had been dried at a fairly high temperature showed a decreased manurial effect, compared with the original wet sludge.

Clear evidence has been obtained that activated sludge can be kept under water indefinitely without becoming offensive, if aerated from time to time, but a process of auto-digestion sets in, resulting in diminution of organic matter and reduction of the bacterial content.

In the early developments of the so-called "M7" process, the writer obtained, through a personal friend, an introduction to Messrs. Jones & Attwood, Ltd., who placed the services of their hydraulic staff at his disposal: the result of their enterprise and initiative will appear later.

Early in the investigations the advantage of finely divided air was recognised, and the first experiments with the use of a porous material for this purpose were made in the Frankland Laboratory of the Manchester University.

The earlier field experiments at Davyhulme in connection with the M7 process were made in a small rectangular tank, divided up into four compartments with an air lift in each; this proved unequal to maintaining the oxygenation, and Messrs. Jones & Attwood were asked to make a report on it. They suggested an increased volume of air and a modification of the air lift by which the sewage was delivered by the air lift into a funnel in such a way that it drew in fresh air, and the air and aerated sewage were delivered at the bottom of the tank.

One of these was ordered, and proved a great improvement on the simple lifts, and three more were therefore ordered, one being installed in each of the four compartments. After working for some time, growths stopped the flow in the lifts. The experiment was not wasted, as it established the facts that pipes as small as 2 in. were inadmissible, and also that it is necessary to maintain a good circulation in all parts of the tank in order to keep the micro-organisms diffused.

Messrs. Jones & Attwood were then asked to put forward a design for a tank for the activated sludge process, and they made several suggestions, but the design adopted was a series of nozzles, one in each square yard of the tank. The general circulation was quite good with this arrangement, but deposits of sludge were found to take place round each nozzle.

Meanwhile, experiments had established the fact that their porous stone diffusers gave far better results than plain nozzles, and it was decided to replace the nozzles in the activated sludge tank with these.

This greatly improved the circulation and diffusion of air and sludge, but did not get over the trouble of sludge deposits, and at their suggestion ridges of concrete were put in, thus making the bottom into a series of cups. These proved more satisfactory, but had the disadvantage that if a diffuser failed, a pocket of de-aerated sludge was formed.

It is only fair to add that one of the alternatives suggested by them was the dividing up of the tank into a series of channels, the bottom arranged with a series of ridges and furrows in each channel and with a row of diffusers at the bottom of each furrow. Had this been adopted, complete diffusion of sludge and air would probably have been obtained through the tank with no place for the sludge to deposit.

The application of a porous tile, now known as a diffuser, in the special manner described in the patent specifications of Messrs. Jones & Attwood, has greatly economised the power required for air-diffusion.

A fine emulsion of air and water is produced, which, owing to its lower specific gravity, rises rapidly to the surface, carrying the activated sludge with it, and causing a vertical whirlpool. If the tank is properly designed, and the area of diffusers properly proportioned, every particle of sewage is carried from the bottom to the top and down again and the process continuously repeated.

Thus the one essential condition for the success of the activated sludge process is realised, viz., that no particle of sludge is allowed to stagnate and become de-aerated, and so capable of fouling the effluent. This result is accomplished by the sole agency of compressed air without moving mechanism in the tanks.

As with the scientific researches in the Manchester Laboratories, so it is satisfactory to note that in regard to the design and methods of working, no fundamental improvements have, so far, been brought to one's notice on the designs brought out by Messrs. Jones & Attwood acting in collaboration with the scientific pioneers, and with the support of the Manchester Corporation.

Trials on a fairly large scale have been made at a number of places.

The experimental tank at Davyhulme of 20,000 gallons capacity already referred to has, for various reasons, been so far chiefly valuable in revealing sundry important points which need to be observed if success is to be attained, particularly the following:—

(1) All heavy grit and large floating solids must be eliminated by suitable catch pits and screens before the sewage enters the blowing tank.

(2) No portion, however small, of the activated sludge, must be allowed to stagnate and become de-aerated.

(3) In drawing off the clear effluent, care must be taken not to draw off any sludge with it.

(4) Where bacterially inhibitory trade effluents are present in the sewage it is necessary to increase the number of units, and thus prevent the whole of the activated sludge from becoming affected.

After numerous set-backs, this tank is, however, now giving good results, something like 30,000 to 40,000 gallons per day being effectively purified.

It has also allowed definite measurements to be made of the quantity of air necessary for efficient purification.

The experiments at Salford by Messrs. Melling & Duckworth were made with the cognisance and occasional suggestions from the present writer. The experiments proved the principal of the "fill and draw" tank with quantities of sewage up to 100,000 gallons per day. Recently a series of trials have been made with a continuous tank, the sludge being circulated on similar lines to the designs of Messrs. Jones & Attwood, and the results have been highly satisfactory.

The Salford experiments, though of great interest and value, suffer from the fact that no attempt has been made accurately to determine the amount of air used, and the tanks employed have not been specially designed for the purpose, but are adaptations of an existing installation.

The most important large scale experiments so far carried out are those undertaken by the Sewerage Commission of the City of Milwaukee, U.S.A., through their engineer, Mr. T. Chalkley Hatton. The chemical side of the work has been carried out by Mr. William R. Copeland, formerly chemist to the Metropolitan Sewerage Commission of New York. The present writer was officially retained early in 1914 to advise by correspondence in regard to the experimental work. In the first place, trials were made with a "fill and draw" tank designed practically in accordance with drawings sent out from England.

(To be concluded.)

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PORTLAND CEMENT MANUFACTURE IN THE UNITED STATES.

H.M. CONSUL-GENERAL at Chicago (Mr. H. D. Nugent) reports that according to an estimate of the output of Portland cement in the United States in 1915, made by the United States Geological Survey, the production was about 85,732,000 barrels (of 380 lb. net), as compared with 88,230,170 barrels in 1914, a decrease of 2.8 per cent. The stocks of finished cement at the mills amounted to about 11,583,000 barrels, as compared with 12,893,863 barrels in 1914, a decrease of 10.2 per cent. The slight decrease in production and the considerable decrease in stock indicate greater caution in the industry, which in the preceding few years showed a tendency towards over-production.

The general prices averaged a few cents lower per barrel in 1915 than in 1914, although towards the end of the year they were considerably higher. The statistics show that the general volume of business was about the same as in 1914. The outlook for 1916 is stated to be brighter than for several years.

VARIETIES.

SIR GEORGE GREENHILL, F.R.S., and Mr. Charles Bright, F.R.S.E., M.Inst.C.E., desire it to be known that they have requested their names to be withdrawn from the Executive Committee of the Aeronautical Institute.

MR. EDWIN SEWARD, F.R.I.B.A., after a residence of over forty years in Cardiff, is about to take up his residence at Weymouth. His removal there is largely due to health reasons. Mr. Seward will, however, continue his business connection with Cardiff.

MEMBERS of the Amalgamated Society of Carpenters and Joiners are to vote on a proposal to continue the general levy for a few months longer in order to enable the society to protect their interests under all contingencies following the conclusion of war.

EFFORTS are being made to induce the Government to co-operate with the building trade unions and other labour organisations in making preparations for housing and unemployment problems after the war. A congress of trade and labour delegates is being convened to be held in London from Tuesday, April 11, to Friday, April 14. The subjects to be discussed include (1) preparation of housing schemes; (2) Government aid to local authorities; (3) provision of homesteads with small holdings; (4) town-planning schemes; (5) the possibility of adopting new building materials and securing economies in the design of cottages.

THE opening ceremony of the U.M. Church in Morley Road, Doncaster, took place on March 2. Externally the building is faced with red bricks with Bath stone dressings. The seating, &c., is of oak, and accommodation is provided for about 520 persons, with provision for a future end gallery. The school section is deferred for the present. The contract for £3,715 has been carried out by Messrs. Pattinson & Son, of Ruskington, near Sleaford, from the designs of Messrs. George Baines & Son, architects, London and Leeds.

BUILDING ground in the vicinity of Belfast which was lying idle is now being turned into garden plots. Through the efforts of the Christian Civic Union, about 1,000 men are at present cultivating plots each about one-sixteenth of an acre in extent. The garden plots are situated in localities near working-class districts, and are capable of producing a supply of vegetables and flowers for about 1,000 families. In a short time 1,500 plots will be under cultivation. The plots are let at from 6*s.* to 7*s.* 6*d.* a year, and it is calculated that a careful cultivator can secure a profit of from £3 to £5 per annum after paying his expenses.

THE South Wales Garden Cities and Town Planning Association is conducting an inquiry into the planning and internal arrangement of dwellings from the women's point of view. It is proposed by personal inquiry amongst women all over the South Wales coalfield to ascertain what are regarded by women as the principal faults of house-planning, and also to receive suggestions as to constructional materials and arrangements, the use of which would tend to reduce household labour. In addition various subjects relating to the improvement of home life will be investigated—for example, co-operative house-keeping, hostels for single men, &c. The results of the inquiry will be embodied in a report and published. An Advisory Committee of women is being formed to assist in the inquiry, and a meeting of this committee will be held at the City Hall, Cardiff, on Saturday afternoon, April 1.

THE foundation-stones of the P.M. Church at Salisbury were laid on March 8. The church will accommodate over 400 persons, and is of late Gothic design freely treated. Externally the buildings are faced with Southwater red facing bricks, the dressings being of Bath stone. The contract for the first section—church, tower and spire, and vestries—is let to Mr. J. Nichol, of Southampton, and the amount is £3,463, exclusive of seating, and the buildings are being carried out from the designs and under the superintendence of Messrs. George Baines & Son, architects, 5 Clement's Inn, Strand, London, W.C., and Leeds.

THE Oxford University Press will publish shortly another volume by Mr. Francis Bond in the "English Church Art" series entitled "The English Chancel." For the first time a detailed history is given of the English altar and its successor, the Communion Table; also of the seventeenth-century controversies by which altar rails were introduced, and placed sometimes on all four sides of the table, sometimes on three sides, and finally on the west side only. With this is incorporated an account of the various forms of the English reredos and other accessories of the altar. Then comes a description of the piscina in both its forms, the credence shelf, and the sedilia. The existing examples of the Easter sepulchres are illustrated, and the remarkable ritual of Passiontide is described. On no member of the English mediæval Church was such consummate art expended as on the sedilia and piscina, and these and the other contents of the English chancel are very fully illustrated.

THE new Technical College in Cathays Park, Cardiff, was opened by the Lord Mayor on Monday last. There are 6,000 students under the Cardiff technical system. The new building will gather into one commodious centre the classes which have been distributed among seven distinct buildings. The total cost of the college will be nearly £62,000 when it is fully complete. The building is in the form of three sides of a square, the fourth being reserved for future extension. Two rows of workshops, top-lighted, have been erected in the area between the north and south wings and parallel to them, while the assembly and examination hall, which is centrally situated and has a seating capacity of 400, binds all together. Importance has been attached to giving adequate accommodation to the departments of engineering and shipping. Large workshop accommodation has also been set apart for the important building trades, while the necessity for greater attention to our food supplies has been met by the erection of a model bakery. Excellent laboratory accommodation has been provided for chemists; the laboratory accommodation for the physical sciences is also complete, while the school of art and the women's technical department are well provided for. Altogether fifty lecture rooms, workshops, and laboratories have been provided. The architects (Messrs. Ivor Jones & Percy Thomas), Mr. J. E. Turner, of Messrs. E. Turner & Sons, the contractors, and the Principal are all old students of the Technical College.

MR. DOUGLAS STRACHAN, artist, has contributed the subjoined explanatory note of design for the window which has been inserted in the nave of Dunfermline Abbey by Mr. Carnegie in memory of his father and mother: The design is based on the words, "The work of righteousness, shall be peace; and the effect of righteousness quietness, and assurance for ever"; and the purpose of the colour scheme as a whole is to express tranquillity and assurance—the fresh calm of rosy dawn. In the lower part of the composition the Prophet, Seer, Masterspirit, sits on the ruined ramparts of a dismantled fortress, gazing across the landscape to the distant hills, which are catching the first bright rays of the new dawn—though he still sits in the shadow. His pose is intended to suggest the tension of the poet witnessing the dawn of a new age and ideal; his lyre gripped, and ready to give utterance to his thought. His spiritual vision is figured above—East and West meeting within the encircling wings of Peace—the figure of Peace more impalpable than the other two, as of a Presence or Influence rather than a definite personality. The figure representing the West carries a hammer; the figure of East, a lotus—symbols intended to suggest the immense possibilities (other than the obvious ones of Peace and Constructive Progress) that might result from a union of the Industrial-mechanical genius of the West with the Spiritual-poetical genius of the East. Ivy creeps and twines over the crumbling battlements; the vine, the symbol of life and gladness, embraces the whole composition. The colour, roughly speaking, is of a velvety depth and richness in the lower portion, and an opalescent shimmer in the upper.

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THE
Architect and Contract Reporter.
FRIDAY, MARCH 24, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

**** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITION OPEN.

DUBLIN.—June 15.—The Senate of the National University of Ireland invites designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2*s.* deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

ALDERSHOT.—For drainage reconstruction work in connection with 78, 80, and 82 Ash Road, for the Aldershot Urban District Council. The Sanitary Inspector, Municipal Buildings, Aldershot.

CWM.—March 25.—For erection of a chapel at Cwm, Mon., for the Wesleyan Methodist Connexion. Mr. R. L. Roberts, M.S.A., Abercarn.

HAINE.—April 11.—For the carrying out of certain works at the porter's lodge and discharge block of the Thanet Isolation Hospital, Haine, near Ramsgate, for the Isle of Thanet Joint Hospital Board. Mr. H. Bertram Langham, architect, Bank Chambers, Broadstairs.

HAYES.—April 1.—For erection of fifty-two workmen's dwellings, the laying out of the site, and construction of fences, paths, drains, &c., for the Urban District Council. Deposit £5 5*s.* Mr. D. C. Fidler, architect and surveyor, Council's Offices, Grange Road, Hayes End, Middlesex.

IRELAND.—April 10.—For erection of a hall, for the Orange Lodge, Pettigo. Mr. J. S. Collins, Pettigo, Co. Donegal, or from Messrs. F. E. Townsend & Son, architects, Enniskillen.

MORLEY. — March 27. — For bricklayers', joiners', plumbers', plasterers', and slaters' work required in re-erection (after fire) of three-storey mill premises at Deanfield Mills, for Mr. James Barker. Mr. T. A. Buttery, Licentiate R.I.B.A., architect and surveyor, Queen Street, Morley, and Leeds.

RHYMNEY.—March 25.—For certain alterations to the cellars at the brewery, Rhymney, for Messrs. A. Buchan & Co. Mr. T. Roderick, architect, Ashbrook House, Aberdare, or Mr. G. L. Pares, the Brewery, Rhymney, Mon.

SCOTLAND.—March 25.—For the removal of the composite wood and iron school building from Morgan Street and its re-erection on a site at Wallacetown Public School, and also for mason work, smith work, and painter work in connection therewith, for the Dundee School Board. Mr. J. E. Williams, clerk, School Board Offices, Dundee.

WALLASEY.—March 28.—For taking down existing box girder buckstays and the supply and erection of new R.S. girders to replace; also R.S. floor joists and channels (all in accordance with specification) at the Gasworks, Limekiln Lane, for the Wallasey Corporation. Mr. J. H. Crowther, engineer and manager, Limekiln Lane, Wallasey, Cheshire.

THE SELIMIEH MOSQUE.

THIS pride and glory of Adrianople was not built, as Lady Mary Montagu affirmed and as many people still suppose, by the great Sultan Selim I., conqueror of Egypt and the Califate. On the contrary it is the work of his ignoble grandson, Selim II., to whom our Persian ambassador brought his fifty three camel-loads of presents. Nevertheless, no one who wishes to know something about one of the greatest architects of the sixteenth century can afford to stay away from Adrianople and miss seeing how the Selimieh stands at the highest point of the town, lifting its four great minarets into the sky with the nobility of which the Turks have always had the secret.

The architect of the Selimieh, like so many great Turks of his time, was by birth a Christian—namely, a Greek of Asia Minor, whose destiny it was to be one of the tribute-boys annually taken by the lords of the land from their Christian subjects and brought up as Mahommedans. The handsomer and more intelligent boys became pages at the palace, and from them were long recruited all the higher officers of State except those of the cult. The more athletic and the less easy-mannered became janizaries. Sinan happened to be one of the latter. But his masters, discovering that this young soldier had an aptitude for building bridges, were discerning enough to recognise his genius and to give it scope. He became chief architect to Suleiman I., whom he long outlived. And the innumerable public works designed by Sinan are that monarch's chief justification for his European sobriquet of the Magnificent. Sinan, as I have said, is reported to have considered the Selimieh his best work, saying that he designed the Shahzadeh in Constantinople when he was an apprentice, and the great mosque of Suleiman when he was a journeyman, but the Selimieh of Adrianople when he was a master-builder. —From "Adrianople between Wars," in "Harper's Magazine" for February.

THE Incorporated Church Building Society held its usual monthly meeting on Thursday, the 16th inst., at the Society's House, 7 Dean's Yard, Westminster Abbey, S.W., Lieut.-Colonel the Hon. G. H. W. Windsor-Clive in the chair. There were also present: Sir Edward Thesiger, K.C.B., Sir Edwin Grant-Burls, C.S.I., the Rev. Canon Edgar Sheppard, K.C.V.O., D.D., the Rev. R. R. Powell, Mr. J. E. Ollivant, and Mr. H. P. St. John. Grants of money were made towards building new churches at Goodmayes, St. Paul, Essex, £150; and Scotswood, St. Margaret, near Newcastle-on-Tyne, £130. Grants were also made towards enlarging the church of St. Hilda, Ravenscar, Yorks, £20; and repairing Wigginton, St. Giles, Oxon., £10. The following grants were also paid for works completed: Cwmbran, St. Gabriel, Mon., £175; Belmont, St. John-the-Baptist, Surrey, £130; Anwick, St. Edith, Lincs, £25; and Southend, St. Erkenwald, £30. In addition to this the sum of £96 was paid towards the repairs of eleven churches from Trust Funds held by the Society.

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THE ACTIVATED SLUDGE PROCESS OF SEWAGE PURIFICATION.*

By Professor G. J. FOWLER, D.Sc., F.I.C.

(Concluded from last week.)

THE following paragraphs are taken from Mr. Chalkley Hatton's paper in the "Engineering News" for July 15, 1915:—

"The tank is made of wood, 32 feet long, 10½ feet wide, and 10 feet clear depth. . . . Filtros plates were used as air diffusers. These were built into a concrete channel; but this method was found unsatisfactory because the cinders under the concrete contained the air after the pressure was shut off, and, during the sedimentation period, when it is necessary to maintain the liquor as quiet as possible, this entrained air persisted in rising to the surface and keeping the liquid considerably disturbed. To overcome this the plates were placed in cast iron frames . . . and a ½-in. air pipe was tapped into the bottom of each frame. Since this has been done there has been less trouble with entrained air.

"Rebuilding the bottom of this tank put it out of commission from April 14 until May 6, 1915, from which date it has been in continuous operation.

"The air delivered to the tank is measured through a Venturi meter, and recorded by a manometer furnished by the builder's iron foundry. The air for the plant is furnished by a Connersville positive blower of the Boston type, operating to 5 lb. pressure, and actuated by a disc motor."

The following description of the activated sludge is also taken from the same paper:—

"The laboratory tests show a sludge which differs materially from either Emscher tank or septic tank sludge. It is not gaseous, like the former, nor does it retain its moisture, like the latter. It is granular in appearance, settles to the bottom, the clarified liquor coming to the surface quickly. That is, in four hours a sludge containing 98 per cent. moisture is reduced to from 75 to 80 per cent. of its volume, containing about 75 per cent. of moisture. The liquid separates from the sludge so quickly and effectually that there need be but little difficulty in drawing it off from a sludge tank and dewatering from the surface as well as from the bottom. The sludge gives off no odour when fresh; after being retained in open bottles for several days it turns from a medium brown to black, and putrefies. There is no odour about the tanks while the sewage is being treated."

In regard to the important question of cost, Mr. Chalkley Hatton writes:—

"Several inquiries have suggested that the cost of air would prove to be prohibitive, as has been the case in investigations of other processes. To the end that the writer would not be deceived in this very important item, special attention has been given by all connected with the work in arriving at the cost of air. The best apparatus obtainable for measuring the volume and pressure of air used in each tank have been installed, and these are tested out every week. Every half-hour of the twenty-four hour readings are taken. The liquor treated is all measured volumetrically. An engineer is in charge of the work both night and day under the direction of William R. Copeland, chief chemist, and the orders from headquarters are to record the truth.

"So far the cost of air for treating the sewage in the Fowler tank is $1 per 1,000,000 gallons per hour aerated. This cost is based on electric current at 1c. per kw.-hour, a blower efficiency of 73 per cent., and a motor efficiency of 90 per cent. The sewage commission has been tendered a proposition from the local electric company to supply current in the quantity required for pumping and blowing for 0.77c. per kw.-hour. A blower of 30,000 to 40,000 cubic feet per minute, direct-connected to a steam turbine, will produce power at less cost than the electric unit. So far the cost bugaboo has not materialised. It may appear with winter temperatures. For the purpose of testing the continuous-flow principle a tank of 22,500 gallons capacity has been installed.

"The writer so far claims nothing except that there is no doubt that the Milwaukee sewage can be treated by this process, during at least eight months in the year, so as to produce a stable effluent at less cost than any of the other processes so far tested in the experiment station under his directions—and these processes have included fine screening, Emscher tanks, chemical precipitation, sprinkling filters, liquid-chlorine disinfection, and electrolytic disinfection."

On the strength of these experiments a large scale plant has been installed consisting of eleven circular concrete tanks capable of dealing with 1,600,000 U.S.A. gallons (or 1,330,000 Imperial gallons) of sewage daily with a four-hours' period of aeration and a 25 per cent. activated sludge content.

These tanks have been described in detail in Mr. Chalkley Hatton's paper. In an abstract of Mr. Hatton's paper it is stated, with reference to diagrams of cost, which he shows:—

"These diagrams are based upon rectangular tanks holding an average depth of nine feet of liquor, the depth which has so far seemed most applicable to the Milwaukee situation.

"In Milwaukee the most satisfactory results have been obtained by using 0.25 cubic feet of air per minute per square foot of tank surface, a period of four hour aeration with a sludge content of 25 per cent. By referring to diagram two it will be seen that this treatment will cost $5.30 per million gallons treated, exclusive of engine room and plant labour and the disposal of the sludge. If a lower standard of effluent is required and a three-hour period of aeration only is required with 20 per cent. sludge content and the same rate of air supply, the cost will be seen to be $3.95 per million gallons treated.

"Mr. Hatton believes he is warranted in the statement that the above costs are much below the cost of producing an equal standard of effluent from any other process of sewage treatment applicable to a large United States municipality. It seems quite within the bounds of reason to anticipate that there will be sufficient recoverable value in the sludge to pay for its final disposition at least, so that the cost of this portion of the process need not be taken into consideration when comparing it with the cost of treating sewage by any other process."

(From the "Engineering Record," Vol. 72, No. 16, October 16, 1915. Page 481 and seq.)

It is of interest to note that Mr. Hatton's estimate of air required, viz., 0.25 cubic feet of air per minute per square foot, is exactly in agreement with the figure arrived at in the experiments at Davyhulme.

A considerable quantity of the activated sludge from the Milwaukee tanks has been treated by a process brought out in the Packinghouse district of Chicago, by which the sludge containing 55 per cent. moisture is freed from fats by naphtha, dried by indirect heat to 7 per cent. moisture, after which it is bagged ready for shipment as fertiliser, the fats being distilled and put into barrels. The process has been found to yield a good commercial profit.

Other centres in the United States are experimenting with the process as follows, as explained in "Metallurgical and Chemical Engineering" for December 1, 1915:—

"At Baltimore they have been working on a small scale, but have adapted two of the new Imhoff tanks for the use of this process, and it is expected that in a short time they will be using activated sludge on a large scale.

"At Washington the Hygienic Laboratory of the Public Health Service is experimenting on a small scale,

* A Paper read before the Institute of Sanitary Engineers, at Caxton Hall, Westminster, on February 2, Mr. S. A. Self (Chairman of Council) in the chair.

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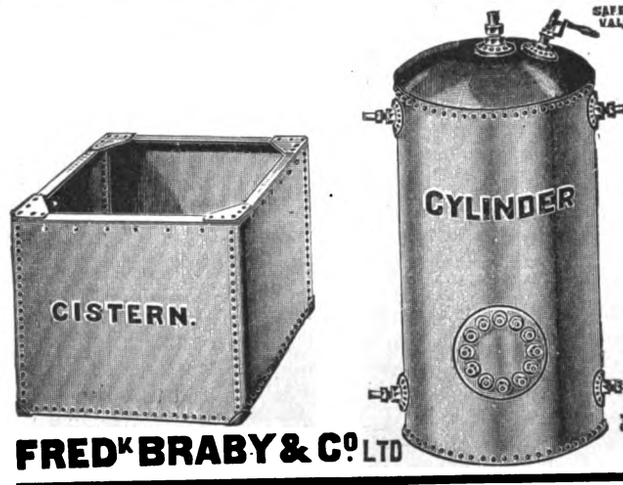
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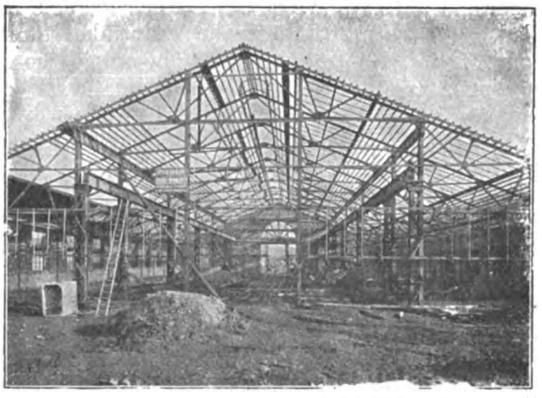
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and is co-operating with the department at Baltimore in their experiments.

"At Cleveland experiments are being carried on in the sewage experiment station. They have adapted tanks 5 by 10 and 5 feet deep, which they used in their sewage experiments to the process; and, while it has barely begun, they are getting promising results. Experiments are to be carried out on a larger scale.

"At Regina, Saskatchewan, experiments on a considerable scale have been carried out, and their results are reported by R. O. Wynne-Roberts. ("Canadian Engineer," 29.112-3.)

"At Houston, Tex., they are planning to use the process in a plant to ultimately treat the sewage from 160,000 people. They do not expect to obtain complete nitrification, as they do not believe that a completely purified effluent is necessary.

"In Chicago the sanitary district of Chicago is using tanks about 2 feet in diameter and 8 or 10 feet high, with quite satisfactory results, using the waste from the stockyards, one of the most difficult wastes that we have to treat."

In this country an installation on the "fill and draw" system is now in operation at the Baguley Sanatorium of the Manchester Corporation to deal with the sewage of about 400 people. Although the arrangements for separate precipitation of the laundry waste are still incomplete, the purification of the sewage is proceeding normally and the sludge gradually building up.

An installation on the continuous flow system is being put down at Stamford to treat 100,000 gallons per day, and at Worcester to treat 1,000,000 gallons per day and accompanying storm water. It will be some time before the possible data from these installations are fully available, more particularly those regarding the disposal of the surplus activated sludge, but such matters as air cost, suitable shape and depths of tanks, stability of diffusers, &c., should soon be decided.

In the light of what has already been done, the writer has every confidence in the future of the process.

The outstanding feature to his mind is the possibility it affords at last of utilising the valuable nitrogenous manure which by present-day methods is generally removed at considerable expense and thrown away as useless and polluting sludge.

It has so often been claimed before that the sewage public is naturally sceptical, but in this case the process is based on careful scientific work, the result of that collaboration between the university and municipality which the writer has always striven for.

Much work remains to be done both on the scientific and technical side before this most important question is fully settled.

On the purely scientific side, the exact conditions have still to be determined which affect the availability of the nitrogen in activated sludge, and the exact chemical changes have to be studied which take place when the material is used as a fertiliser.

In this connection the possibility of its use as an aid to nitrogen fixation must not be lost sight of. There is evidence, as yet unpublished, that nitrogen fixing organisms are present or are capable of living and working in activated sludge.

So far the testing of the fertilising value of the sludge has been tried only on a small scale, owing to the limited quantity of material available; but when the installations now under way are in full working order, trials on a commercial scale will be possible; and it is satisfactory to know that the Board of Agriculture is taking an active interest in the matter.

Activated sludge differs from ordinary sludge in its physical characteristics and in its ready drainability; but, on the other hand, it has the property of holding up a large percentage of moisture after it is readily spadeable. It is gelatinous rather than colloidal. The methods to be adopted for the extraction of moisture, the pressing, drying, and conversion of the sludge from what has formerly been regarded as a troublesome and costly nuisance to a welcome and valuable fertiliser, will depend upon the quantity to be treated; these problems will provide technical and practical engineers with an open field for invention and initiative.

If, in these various directions, the problem of returning the nitrogen of the sewage of our great towns to the soil can be solved, it will be possible to look forward to achieving the economic advantages of the conservancy system as practised, e.g., in China, Japan, and many towns in India, without their offensive and insanitary accompaniments.

There are also many barren sandy tracks both in India and Africa which mainly need manure of this character—i.e., rich in humus, to transform them into fertile areas.

The writer is informed by Mr. Carkeet-James, recently Engineer-in-Chief to the Sewerage of Cairo, that there is an unlimited demand for manure in Egypt, owing to the fact that since modern irrigation methods have been introduced, the land no longer gets the deposit of Nile mud as formerly; while, on the other hand, it is cultivated all the year round, as compared with the six or eight months when the Nile was in flood.

The writer looks forward, in the position to which he has recently been appointed, to developing this, among other problems, in applied chemistry in the East.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 7,204 May 13, 1915.—H. H. Thompson, 12 Carteret Street, Queen Anne's Gate, S.W.—This invention relates to the bars employed in reinforced concrete construction, and has for its object to provide a form of bar for embedding in concrete which, whilst of a

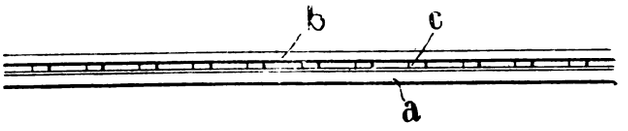


Fig.1.



Fig.2.

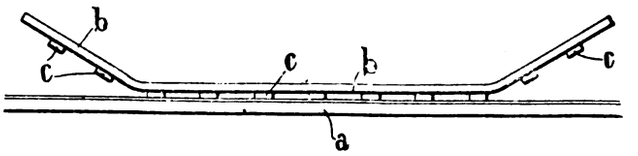


Fig.3.

design adapted to efficiently resist shearing stresses, shall at the same time be capable of economical manufacture and ready use in any desired lengths. Fig. 1 shows a bar constructed in accordance with this invention. Fig. 2 is a cross-section of the bar. Fig. 3 is a view of the bar shown in fig. 1, but with the upper portion

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divided into section to form shear members. The bar is made of substantially rail section, but with the base a of the rail of such dimensions that it provides the strength required in the bar. The head b of the rail section bar is adapted to be divided into lengths and to be partially separated and bent up at intervals from the base of the rail section so as to provide the stirrups or shear members necessary for resisting shear stresses. To facilitate such partial separation and bending up of the head from the base of the rail section, the web c uniting same is slotted at intervals throughout its length. The shear members may be bent to any required inclination to the bar to suit requirements, one at least of the unslotted portions of the web forming the base of each member and its point of attachment to the bar. The bar being of an ordinary section can be readily and economically produced and stocked in various lengths, the processes of slotting the web and of dividing and bending the shear members being effectively accomplished by simple and relatively inexpensive machinery. With a bar produced as before described, the stirrups are securely bonded to the bar and less liable to be torn or broken therefrom.—February 17, 1916.

PROPOSED ASSOCIATION OF MASTER PAINTERS AND ALLIED TRADES.

A MEETING will be held on Thursday, March 30, at 7.45, at Limes Hall, Limes Grove, High Street, Lewisham, and another on the following day, Friday, March 31, at the same time, at Croydon Public Hall, George Street, Croydon, with the object of forming local associations of Master Painters, Decorators, and kindred trades for the districts of Lewisham, Deptford, Greenwich, Catford, Forest Hill, Ladywell, Hither Green, Lee, Blackheath, Brockley, and New Cross, and also the districts of Croydon, Thornton Heath, Waddon, Sutton, Carshalton, Hackbridge, Wallington, Beddington, Purley, Addiscombe, &c.

Every employing painter, builder, &c., is earnestly requested to attend. The speakers will include several gentlemen representing the National Association of Master House Painters and Decorators, and others representing the London Association of Master Decorators. Tickets of admission may be obtained from Mr. Arthur S. Jennings, editor of "The Decorator," 365 Birkbeck Bank Chambers, High Holborn, London, W.C.

VARIETIES.

MR. JOHN WILLIAM TAYLOR, of Castle Leazes, Newcastle-upon-Tyne, architect and surveyor, left £500 to the Young Men's Christian Association. The will has been proved at £21,914, and net personalty £4,059.

THE Edinburgh Electric Lighting Committee on Monday last considered the estimates for the complete structural and steel work of a new generating station at Portobello, and resolved to recommend the acceptance of estimates amounting to £30,000.

AT the annual meeting on March 29 of the Northern Architectural Association in Newcastle it will be proposed "That Rules 21 and 22 governing the annual election of officers and council be suspended for one year, and that the officers and council elected at the annual general meeting held on March 31, 1915, shall continue in office until the annual general meeting proposed to be held in March 1917."

THE Union of Welsh Societies have published what may be regarded as the first real work on art published in the Welsh language. It is entitled "Perthynas y Cain a'r Ysgol" ("The Relation of the Beautiful to the School"), by Mr. T. Matthews, of Llandybie, and contains some reproductions of Welsh art, the frontispiece being Mr. Christopher Williams' picture "The Awakening of Wales." The aim of the book seems to be the beautifying of the Welsh schools by good reproductions of the best pictures.

THE first meeting of the National Building Trades Demarcation Committee has been held in London. This body is the outcome of an agreement which has been arrived at between the Employers' National Associations and fifteen workmen's societies, under which all questions or disputes relating to demarcation of work are to be referred to standing joint committees with a view to amicable settlement, without resort to strikes. Local Demarcation Committees are to be formed in each district. The agreement affects 500,000 men employed in the trade.

THE amount of fire losses in Glasgow during last year was £452,162, as compared with £211,126 in the previous year. In the last five years the losses have amounted to £1,049,245. The average per annum over that period is £209,849, as compared with £127,833 for the previous five years (1906 to 1910). These statistics are given in the annual report of Glasgow Rate and Salvage Association. Mr. David R. Brown, the chief officer of the Salvage Corps, states that the corps attended 870 fires during the year, and they turned out to 543 false alarms, 114 of which were malicious.

A MEETING of the Society of Antiquaries was held last week, when Dr. William Martin read a paper on the topography of London as revealed in the stained glass of Lincoln's Inn Chapel. He said that in one of the windows of the south side there was a remarkable series of diminutive views of London, the original sketches of which were unknown, but it was evident that the stained glass artist worked from faithful pictures then extant. These stained-glass pictures compared very favourably with the Elizabethan and Jacobean panoramic views of London, and it was remarkable that London topographers had not gone to the Lincoln's Inn windows to check conclusions they had drawn from other sources.

WE regret to record the death of Robert Cochrane, LL.D., I.S.O., F.S.A., which occurred at his residence in Rathgar, Ireland. Dr. Cochrane, who was in his seventy-first year, was H.M. Inspector of Ancient Monuments for the Board of Works, of which he had been at an earlier period its principal surveyor. He was a recognised authority on antiquarian subjects. He was honorary secretary of the Royal Society of Antiquaries of Ireland from 1889 to 1907, and editor of its journal for the same period. He was president of that Society from 1909 to 1912, and president of the Institution of Civil Engineers, Ireland, 1903-04. He was educated at Queen's College, Belfast, and was an honorary LL.D. of the Royal University of Ireland. In the earliest part of his professional career he was assistant county surveyor for County Down from 1862 to 1874, then assistant surveyor to the Board of Works, and subsequently its principal surveyor, which position he held until 1909. As surveyor to the Board of Works he designed many important public works in Ireland, amongst which were the extensive additions to his *Alma Mater* in Belfast, including the Hamilton Tower and the Students' Union buildings. He was appointed inspector of ancient and national monuments in succession to the late Sir Thomas Manly Deane.

TRADE NOTES.

WITH all tanks constructed to contain liquids the importance of an impervious concrete cannot be too greatly insisted upon. We learn that a tank on Lord Donoughmore's estate at Knocklofty, Clonmel, was constructed with Pudloed cement concrete two years ago. Upon recent examination it appears to be in a perfect condition. It had been subjected to a severe test in the interim.

THE Gypsum Mines, Ltd., Mountfield, Robertsbridge, Sussex, have reprinted in leaflet form an account given in the "Daily Chronicle" of the Well Hall housing scheme at Woolwich. The Office of Works, it may be remembered, set down last year a garden village there for munition workers in record time, completing 1,000 houses in seven months. The Gypsum Mines assisted in making this possible, and supplied 1,935 tons of their Sirapite plaster to the contractors between March and November 1915.

MESSRS. E. H. SHORLAND & BROTHER, LTD., warming and ventilating engineers (patentees and sole makers of the Manchester stove, grate, and ventilators), of Failsworth, Manchester, have recently carried out contracts at the following places: Townley's Hospital, Bolton; the premises of the Publishers' Waste Co., Manchester; Messrs. Ferranti's Engineering Works, Hollinwood; Bedford Union Infirmary; Willerby Asylum, Hull; St. Mary's Church, Berwick-on-Tweed; Dufftown Isolation Hospital; Red Cross Hospital for Wounded Soldiers at Hale End, Essex; Skipton Cottage Hospital; Melton Mowbray Co-operative Society's Offices; the Connaught Hall, Worthing; New Sanatoriums at Inverness and Kirkcaldy, and the Herbert Strutt Schols, Belper.

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THE
Architect and Contract Reporter.
FRIDAY, MARCH 31, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITION OPEN.

DUBLIN.—June 15.—The Senate of the National University of Ireland invites designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2s. deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

BOURNE (LINCS).—April 5.—For works of drainage, &c., to be carried out at the workhouse, Bourne, for the Guardians. Mr. C. W. Bell, clerk, Union Offices, Bourne.

BRADFORD.—April 3.—For all trades in erection of garage and petrol store at Dumb Mill, for the Corporation. The City Architect, Town Hall, Bradford.

HAINE.—April 11.—For the carrying out of certain works at the porter's lodge and discharge block of the Thanet Isolation Hospital, Haine, near Ramsgate, for the Isle of Thanet Joint Hospital Board. Mr. H. Bertram Langham, architect, Bank Chambers, Broadstairs.

IRELAND.—April 5.—For building twelve labourers' cottages at Saint Lawrence, Chapelizod, for the South Dublin Rural District Council. Mr. T. J. Byrne, clerk to the Council, James Street, Dublin.

IRELAND.—April 10.—For erection of a hall, for the Orange Lodge, Pettigo. Mr. J. S. Collins, Pettigo, Co. Donegal, or from Messrs. F. E. Townsend & Son, architects, Enniskillen.

ISLE OF WIGHT.—April 3.—For alterations to 18 High Street, Cowes, for Messrs. Timothy White & Co., Ltd. Deposit 5s. Plans and specifications at above address.

KEIGHLEY.—April 3.—For the concrete foundation work, &c., in connection with a 5,000-k.w. turbo-alternator at the electricity works, Coney Lane, for the Electricity Committee. Deposit 10s. 6d. Mr. H. Webber, A.M.I.E.E., borough electrical engineer and tramways manager, Electricity Offices, Coney Lane, Keighley.

PONTEFRACT.—April 7.—For the various works required in the pulling down and rebuilding of the Pineapple Inn, for Messrs. Carter's Brewery Co., Ltd., Knottingley. Send names by April 7 to Mr. W. J. Tennant, architect and surveyor, Pontefract.

SALFORD.—April 3.—For supply of concrete foundations for 5,000-kw. turbo-alternator, for the Electricity Department. The Borough Electrical Engineer, Electricity Works, Frederick Road, Salford.

SCOTLAND.—For the mason, carpenter, plumber, slater, plasterer, painter, bellhanger, and ironmongery works of proposed alterations at Craigneish School, Old Edinburgh Road, Inverness. Messrs. Cameron & Burnett, architects, and ordained surveyors, Academy Buildings, Inverness.

SELBY.—April 12.—For erection of thirty to 100 cottages, for the Urban District Council. Mr. B. Gray, C.E., F.R.S.(Edin.), Council Chambers, Selby.

STAINLAND.—April 3.—For works in extension to mill premises at Stainland, Yorks. Send application by April 3 to Messrs. R. Horsfall & Son, architects, 22A Commercial Street, Halifax.

STRATFORD-ON-AVON.—April 1.—For the following work, for the Stratford-upon-Avon and Midland Junction Railway Company—viz.: (Contract 1) alterations and additions to present offices; (2) sewerage scheme in cast-iron and earthenware pipes, manholes, &c.; (3) water scheme, 3-in. cast-iron and ¾-in. lead piping, including fire hydrant meters, &c. Send applications by April 1 to Messrs. Knight & Hebery, 5 Rother Street, Stratford-on-Avon.

WALES.—April 5.—For alterations, &c., to Nos. 62 and 63 Dunraven Street, Tonypandy. Mr. E. I. Evans, architect, Tonypandy.

WALES.—April 15.—For alterations to the Ship and Bonded Stores, Cardigan, and the erection of a new stores, for the Swansea Old Brewery Company, Ltd. Mr. J. T. J. Williams, architect, Napier Street, Cardigan.

WEST TYTHERTON.—April 4.—For repairs, &c., at Curricombe Farm, West Tytherton, Chippenham, for the Small Holdings and Allotments Committee of the Wilts County Council. Mr. J. G. Powell, county surveyor, Trowbridge.

MR. HARCOURT (First Commissioner of Works) was asked in the House of Commons last week for information respecting the work in the roof of Westminster Hall, and the right hon. gentleman replied: One truss has been completely reinforced, pieced with new oak, and treated with preservative. One truss has been half completed, as in the preceding case. Two trusses have been shored up, and the steel-work is in preparation for fixing at an early date. Two other trusses have been partly shored up. The flèche is nearly completed and ready for fixing. A considerable amount of preliminary work has been done, such as the ordering of oak and the selection and ordering of slates. In addition to two steel stages for shoring up, all the trusses are complete. Thirteen trusses in all have to be dealt with. No date for the completion of the work can be given.

THE Phœnix Assurance Company, Ltd., have drawn up a new scheme of life assurance covering war risks. Subject to the company being satisfied as to the eligibility of the life for assurance, they are prepared to grant endowment, or whole of life limited payment, assurances at the ordinary rates of premium (provided the premium for the assurance selected does not amount to less than £3 per cent. per annum) and to meet war risks by a reduction of the sum assured by the policy. If during the war the life assured leaves the United Kingdom on foreign, military, or auxiliary service in any capacity or enters the Aviation or Naval Service, the company's liability would be reduced to one-tenth of the maximum sum assured if death occur during the first year of such service; two-tenths if death occur during the second year; and so on until the maximum sum assured be reached. Until, however, any of the above-mentioned war risks were incurred, the company would hold the assured covered to the extent of the maximum sum assured, but it would be a condition of the policy that notice in writing must be given to the company immediately such risks are likely to be incurred. On the declaration of peace the assured would enjoy various options.

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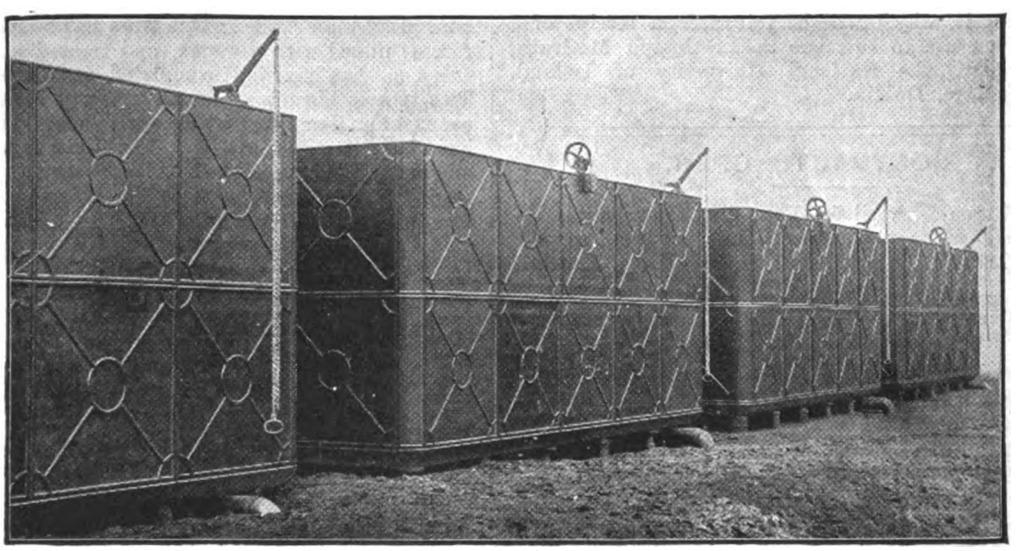

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HEATING OF TEMPORARY WORKS.

FOR some time past appeal has been made in the public Press that the consumption of coal should be reduced in every possible way. The effect has undoubtedly been that both electric and gas heating have largely benefited. Much might be said in favour of either system. But in the case of large areas, either form of warming must be regarded with some trepidation on account of cost. The erection of munition works, and the adaptation of existing buildings, has brought the question of heating seriously to the mind of those responsible for their equipment. It is imperative that the health and comfort of the worker should receive very careful consideration. Where it is difficult to introduce steam-heating—and in many of these temporary buildings it would be impossible—the new coke-stove introduced by Messrs. Alfred Herbert, Ltd., of Coventry, will be found invaluable. The main points in its favour are very easily summed up. First of all, the amount of space occupied, owing to the design, is so small that there can be no conceivable difficulty in introducing it; consumption of fuel is low; it will burn coke, breeze, and any kind of rubbish that is combustible; a considerable heat is thrown out, and very little attention is necessary. Two sizes are stocked. As will be seen by our illustration, there is the feeding door, regulating ventilator, and removable ash-pan. Above this there can be fitted as many hot-air chambers as required; these chambers contain oblique passages, through which the hot air passes and is distributed over a large area. The advantages of the adoption of this stove would be the maximum of heating power for space occupied, economy of fuel, destruction of waste, cheapness of installation, and small amount of attention required.



RUSSIAN CEMENT.

THE British Vice-Consul at Ekaterinburg (Mr. T. H. Preston) reports that the first cement works were opened in the Urals at Neviansk (Ekaterinburg-Perm Railway) during 1914. Formerly the Urals, as well as the whole of Western Siberia, were dependent on cement transported from Russia from the Volga works at Saratov. The price of the Saratov cement used to be 80 copecks per poud (about £5 4*s*. 11*d*. per ton at par), and cement was scarce at this price. The cost of production at Neviansk, however, is stated to be about 2 roubles per barrel (£1 6*s*. 2*d*. per ton).

The whole production of 500,000 barrels (about 83,333 tons) was sold during 1915. The quality of the cement, according to reports of the consumers, has proved satisfactory.

The Ural district is likely to be in the future a very extensive market for cheap cement, especially in view of its employment in the making of ferro-concrete, which is now beginning to be extensively adopted both in private buildings and in various works and factories. It is only since the opening of the new cement works in the Urals that ferro-concrete has become practicable, and it is likely to become very popular both in the Urals as well as in Siberia. It may interest architects and builders in the United Kingdom to know that architectural and building firms, among whom Germans used to predominate, did considerable business in the Ural district in ferro-concrete structure up to July 1914.

SOME PRINCIPLES IN INDUSTRIAL LIGHTING.*

By J. S. Dow.

IN these introductory remarks the object has been to show, by a few typical examples, how the requirements of the Home Office (Departmental Committee's Report) on Factory Lighting can be readily met by modern methods, and to summarise the situation as regards planning installations; discuss a few of the data on which calculations of illumination are commonly based.

The discussion should thus be supplementary to that at our first meeting this session (see "The Architect," December 10). Since that date Vol. III. of the Report, containing the account of the observations in factories, has appeared. The contents of this new volume deserve to be closely studied and should be of great value for reference for years to come; the volume contains by far the most complete account yet published of lighting conditions prevailing in the engineering and textile industries.

As a starting point it is convenient to recall the definition of "adequate and suitable lighting" applying to the suggested general statutory provision "*requiring adequate and suitable lighting in general terms in every part of a factory and workshop.*"

Adequate and suitable lighting, it is suggested, should comply with the following requirements:—

(1) Adequacy.

(2) A reasonable degree of constancy and uniformity of illumination over the necessary area of work.

(3) The placing or shading of lamps so that the light from them does not fall directly in the eyes of an operator when engaged on his work, or when looking horizontally across the workroom.

(4) The placing of lights so as to avoid the casting of extraneous shadows on the work.

In addition, there are provisions 2—7 in the Report, relating mainly to the minimum degree of illumination (0.05-0.4 foot-candles, according to circumstances), which is considered necessary in the interests of safety.

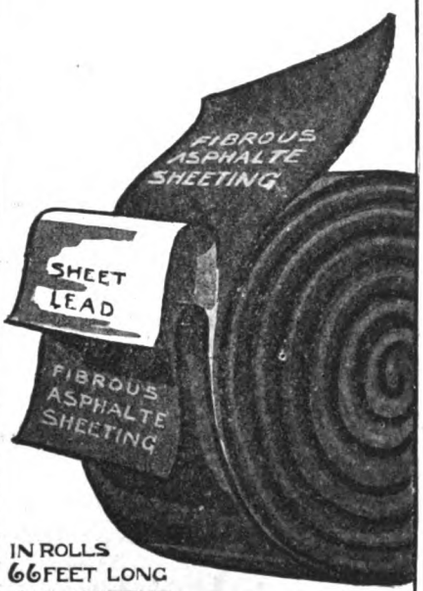
As the Committee have not yet been able to undertake to frame standards of illumination required for various kinds of work, one can only discuss the first term, adequacy, in relation to the general contents of the three volumes of the Report. It may be presumed that the amount of light for carrying on work would only be deemed inadequate when it was obviously below the standard usual for the process in question, and manifestly a hindrance to the worker. We have, however, in Vol. III. excellent information as to the conditions which already exist. One of the first things which strikes one in reading this data is the variation in the amount of illumination afforded in different factories for similar processes. It is evident that a general agreement as to standards would be very helpful in removing these anomalies. Lighting experts would probably agree that the *average* values of illumination recorded in these tables could be quite easily provided by modern methods without undue expense; possibly these averages might furnish a rough indication as to the amount of illumination desirable for the class of work, thus paving the way for the standards which the Committee have ultimately in view.

In many cases, both the illumination at the point of work and the illumination on the floor are stated. After examining these figures one appreciates the wisdom of drawing a distinction between the general illumination necessary in the interests of safety and the illumination for the carrying out of work. The existence of a moderately high illumination at floor-level does not imply that the illumination on the work is ample. Conversely one may find a high illumination on the work but very little on the floor, especially when the point of

* Introduction to discussion at a meeting of the Illuminating Engineering Society, held at the House of the Royal Society of Arts, 18 John Street, Adelphi, London.

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work is a good distance from the floor and the sources of light are placed close to it. On the other hand, when the nature of the work and the arrangement of the machines render it desirable to aim at a high general working illumination throughout the room, one usually provides this illumination by means of sources mounted near the ceiling. In such cases the mere fact of providing adequate illumination for the work should ensure that the minimum value in the interests of safety and convenience will be everywhere exceeded.

These conditions are probably more typical of factories in London than the mills and workshops, covering a very extensive area, in the provinces. However, even in large covered areas, where there are spaces between the points where work is done, and where it would be uneconomical to flood the entire floor-area with light, there ought to be no difficulty in providing sufficient to ensure a minimum of 0.25 foot-candles; and in practice 0.5 foot-candles might be aimed at. Probably there are few cases in which a system of general lighting would be installed with the deliberate intention of producing an even general illumination of this value. The illumination would be necessarily somewhat uneven, the main lighting being of the localised-general character, helped out by occasional units when the illumination was inclined to fall too low. The conditions would then resemble those met with on a platform in the tube railways. I think most people would agree that this illumination is ample from the standpoint of safety: it is probably at least twenty times that considered ample when the first tube was opened.

From the discussion at the meeting on November 23, it would appear that the general impression of illumination prevailing in modern factories is apt to be overestimated. A general illumination of 3 foot-candles appears to be extremely rare.

The Departmental Report shows that 2 foot-candles was only attained in 3 per cent. of the factories visited, while 28 per cent., or nearly a third, fell below the minimum of 0.25 foot-candles suggested. If, therefore, all factories were brought up even to this level a substantial improvement would have been made.

Before leaving the question of the minimum intensity of illumination required from various standpoints, reference may be made to two publications in which the question has been discussed. There is firstly the well-known booklet on Industrial Illumination, issued some years ago by the National Electric Light Association, in which the usual practice for various trades was summarised in a very admirable manner. After examining these figures closely, one is inclined to think that perhaps it is hardly necessary, with our present knowledge, to attempt to discriminate quite so closely between the requirements of different operations as in this production. The following rough classification contained in the recent Code prepared by a committee of the American Illuminating Engineering Society might perhaps serve as a useful guide:—

Class of Work	Minimum Illumination (ft.-candles)	Desirable Illumination (ft.-candles)
Storage, passage-ways, stairways and the like	0·25	0·25—0·5
Rough manufacturing and other operations	1·25	1·25—2·5
Fine manufacturing and other operations	3·5	3·5—6·0
Special cases of fine work	—	10—15

The first value happens to be identical with that suggested in the Report of the Departmental Committee for the illumination necessary in the interests of safety. The other three values come under the head of illumination for the carrying out of work. It may be suggested that almost all industrial operations might be classified under one of these heads, so far as the amount of illumination required is concerned.

It should be particularly noted, however, that merely specifying a certain illumination of the work is not enough to secure "adequate and suitable lighting." The illumination must also comply with the requirements stated above as regards uniformity of illumination over the working area, avoidance of glare, and avoidance of inconvenient shadows.

These are all questions which have received the attention of firms interested in illumination. The provision of a uniform illumination is mainly a matter of arranging the lighting units at suitable distances according to their distribution curves, and in cases where it is necessary to light a large area equally at all points a high standard of uniformity can be obtained. In such cases a variation of not more than 25 per cent. on the work might perhaps be anticipated.

In many cases, however, even a considerable variation in illumination would not be objectionable from the standpoint of efficiency and comfort of workers—provided the illumination on the work always exceeds a satisfactory value; in others an *excess* of illumination in some places is not as a rule detrimental to work, but a variation in the form of too low an illumination at certain points would be.

The next consideration, the avoidance of glare, is an exceedingly important one. This is the requirement which, of all others, is apt to be disregarded in factory lighting, and Vol. III. of the Home Office Report contains frequent objections to installations on this ground. Yet, so far as those who scheme out factory installations are concerned, there is now general agreement that glaring points of light within the range of vision should be avoided, and the explanation of defective installations lies more often in the indifference of the public who have not yet learned that exposed brilliant lights are necessarily wasteful, and even insist on them. No doubt the issue of the Home Office Report will have a good influence in this respect. By the aid of modern appliances it should be practicable in almost every variety of installation to comply with the Committee's suggestion—namely, "the placing or shading of lamps so that the light from them does not fall directly on the eyes of the operator when engaged on his work or when looking horizontally across the workroom." The installations where it would probably be most difficult to meet this requirement are those carried out in rooms with rather low ceilings. However, seeing that the use of an appropriate reflector almost invariably tends to *increase* the light on the work, there is clearly no hardship in asking that such lights should be screened.

The last requirement, relating to the avoidance of inconvenient shadows, is clearly one whose application will have to be studied by practical experience. For the present, no doubt it would serve chiefly to enable inspectors to advise managers of factories to make small adjustments in the positions of lamps, &c., in cases where the wrong direction of light, by causing a deep shadow, was obviously causing inconvenience to a worker or a possible source of danger. As instances, one might mention the presence of an inconvenient shadow at a cutting edge or circular saw, or the shadows thrown by projecting masses of machinery causing moving parts to be in semi-darkness.

The part played by shadows in industrial lighting deserves much fuller investigation than it has yet received. One often finds that an objection to a system of lighting on the ground of insufficiency is really due to the light coming from the wrong direction. The differences in the requirements of different industrial processes are based even more on shadow than on intensity of illumination. Lighting experts should bear this in mind when they meet apparently unreasonable prejudices on the part of clients. The latter sometimes express an objection to some method of lighting which they are unable to explain completely, but which, on closer examination, proves to be well justified. In rooms filled by different classes of machines such considerations may considerably disarrange a regular system of spacing the lamps.

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Assuming, however, that in good installations an illumination is commonly provided which more than meets the Committee's requirements, the next question is whether it is practicable to determine in advance the actual illumination that will result from a given arrangement of lighting units in specified positions; to make sure, in fact, not only that the requirement as regards the minimum general illumination for safety in working areas is satisfied, but that the illumination at the point of work is also ample.

To those who are responsible for the planning of lighting installations it may seem almost superfluous to raise this question, and, in fact, it was conclusively shown in a paper by Mr. Clinton before this Society in 1914 * that by taking sufficient care the illumination obtainable may be calculated with considerable accuracy. But the fact that it was recently stated in a leading technical journal that "no one can calculate beforehand how much light will be required and how much will be obtained by any suggested arrangement," shows that the resources of modern illuminating engineering in this respect are not sufficiently widely known. The view that illumination can be pre-determined with quite sufficient accuracy for practicable purposes was endorsed by a number of witnesses before the Committee, representing both gas and electric lighting.

(To be continued.)

VARIETIES.

MR. JOSEPH RANDALL, late of the firm of Kirk & Randall, builders and contractors, Woolwich, died last week at Summer Court, Shooters Hill, in his seventy-seventh year.

THE Edinburgh Dean of Guild Court last week remitted to the Burgh Engineer plans for an expansion of the factory at Messrs. Redpath, Brown & Co.'s works, Easter Road, for the preparation of sphagnum moss as a dressing for soldiers' wounds.

A LECTURE (illustrated by plans and lantern slides) on "Emergency Military Hospital Construction" will be given by Mr. A. Saxon Snell, F.R.I.B.A., on Thursday, April 6, at 8 P.M., at the Royal Sanitary Institute, 90 Buckingham Palace Road, S.W. This lecture is one of the series of Chadwick Public Lectures, and admission is free. The chair will be taken by Sir Maurice Fitzmaurice, C.M.G. (Chadwick Trustee).

THE Architectural Section of the Royal Philosophical Society of Glasgow held its annual meeting in the Society's room, Bath Street, last week. The following office-bearers were appointed: President, Mr. James Davidson; vice-presidents, Mr. James Lochhead and Mr. William Forbes; hon. secretary, Mr. J. Archie Wilson; hon. treasurer, Mr. J. G. Renwick; hon. members of Council, Mr. A. Gardner, Mr. W. Howatt, Mr. R. Miller, and Mr. Ninian Macwhannell.

THE Ministry of Munitions announce that owing to the great shortage of certain types of building labour for the purposes of urgent Government work, building operations necessitating the employment of navvies, excavators, and builders' labourers should not be started without consultation with the Ministry of Munitions. Inquiries on this matter should be addressed to the Building Labour Department, Ministry of Munitions, 6 Whitehall Gardens, S.W.

A SHORTAGE of houses has for many years existed in the Oldbury and Langley district, but the great influx of munition workers during the past eighteen months has intensified the difficulty. A scheme has been formulated by Accles & Pollock, Ltd., for the development upon garden-city lines of the Basons Lane and Vicarage Farms Estate. The Ministry of Munitions has sanctioned the immediate erection of sixty-four houses upon a section of the land. That the development of the estate might proceed along correct lines, the firm have secured the services of the "Bournville Village Trust, Ltd." Plans of workmen's cottages, as prepared by the Bournville officials, have now been approved, and the cottages will probably be ready for occupation by the close of the year.

THE Victoria and Albert Museum authorities state that in view of the need for economy in public expenditure, the services of an official guide at the Museum will not be available after the 31st inst., but offers of voluntary assistance have made possible the continuance of the public tours at twelve noon and 3 P.M. after that rate. The afternoon tours will be conducted by Mr. Frederic Wilson, those in the morning by Miss E. M. Spiller and other members of the Art Teachers' Guild. Copies of the scheme of tours proposed for April may be obtained at the entrances of the Museum.

ST. SIDWELL'S Church, Exeter, is to receive the offer of a huge chancel rood. The late Mr. Harry Hems, by his will, desired his sons to offer the gift as a memorial. The rood is of unusual size—the beam is of English oak and over 20 ft. in length. Carved upon it are angels; the alternate angels hold a ribbon, on which are inscribed the first verses of the Te Deum. The remaining angels carry shields, with carved emblems of the Passion. Rising to a height of 15 ft. above the beam is the Crucifix, slightly over life-size, with figures of the Blessed Virgin and St. John the Divine. Mr. Hems wished his sons, who have succeeded him in his business, to erect the memorial in the parish church free of all expense. Captain H. T. Hems will formally make the offer at the coming Easter Vestry.

A COMMITTEE has been formed under the chairmanship of Mr. John Lavery, A.R.A., to raise the necessary funds to purchase for the nation Ivan Mestrovic's "Mother and Child," one of the works by the Serbian sculptor included in the exhibition held some months ago at South Kensington. Citing the successful movement which issued in the purchase of Egide Rombaux's "Premier Matin," the committee write thus: "Our desire is that a like permanent symbol should commemorate among us the splendid resistance and measureless sacrifice of the Serbian people. The genius of Mestrovic has been engaged, as we have seen, upon a monument to the ancient struggle and tragedy of his race, and it is particularly appropriate that from his hand should come a memorial of the conflict now renewed." A sum of £1,000 is required.

MR. FREDERICK WILLIAM LACEY, M.Inst.C.E., F.R.I.B.A., M.I.E.E., borough engineer and surveyor of Bournemouth, died on the 24th inst. at his residence, West Cliff Road, Bournemouth. Death was due to heart failure following an attack of pneumonia and pleurisy. Mr. Lacey was elected borough surveyor for Bournemouth on March 5, 1889, when the area of the town was 2,414 acres, and the population 37,000; the area is now approximately some 6,600 acres, and the population has gone up to 85,000. As the borough engineer he was connected with the Corporation tramways, and all the sea works, including the Undercliff Drive, Marine Parade, &c. As borough architect he has, among other buildings, designed the Municipal College, the Law Courts, and almost all the modern schools in the borough. One of his last big schemes was a design for the proposed Pavilion.

THE late Mr. Henry L. Florence, F.R.I.B.A., left estate of the gross value of over £300,000. Among his legacies are £2,000 to the Architectural Association (half of which is to found an annual prize), £10,000 to the National Gallery, and £1,000 to the British Museum. To the National Gallery are bequeathed the marble group "Maternité," by Dalou; and the pictures "Greenwich Hospital," by James Holland; "Deauville," by Eugene Boudin; and "Mousetrap," by P. Van der Werff. The Trustees of the National Gallery are also empowered to select any other of his pictures. To the Victoria and Albert Museum Colonel Florence left such remainder of his pictures, bronzes, enamels, furniture, and objects and articles of art and vertu as may be selected by the trustees or by the committee or a director appointed for the purpose. Both the National Gallery and the British Museum are to benefit in the ultimate division of the residue of the estate, which will amount to about £100,000.

TRADE NOTES.

BOYLE'S latest patent "air-pump" ventilators have been applied to the Council Schools, Resolven, Neath, Glam.

MESSRS. P. C. BURTON & CO., LTD., advertising agents, of General Buildings, Aldwych, W.C., announce their removal to 34 Norfolk Street, W.C. Their telephone number remains as before—City 228.

THE Bath and Portland Stone Firms, Ltd., held their annual meeting on the 24th inst. A dividend equal to 4 per cent. per annum, as against 5 per cent. the previous year, was declared. At Portland the company have acquired a new quarry adjacent to an old one of theirs, and have taken over from the Government quarries formerly worked by the convicts.

* "Illuminating Engineer," April 1914, p. 189.

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THE

Architect and Contract Reporter.

FRIDAY, APRIL 7, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITION OPEN.

DUBLIN.—June 15.—The Senate of the National University of Ireland invites designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2s. deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

ASHINGTON.—For erection and completion of a 12-stalled stable, loose boxes, greengrocery warehouse, &c., for the Equitable Co-operative Society, Ltd. Mr. Osborne Blythe, Licentiate R.I.B.A., architect, Ashington.

HALIFAX.—April 10.—For the works (masons excepted) in erection of munition works, &c., in the borough. Send names by April 10 to Messrs. C. F. L. Horsfall & Son, architects, Lord Street Chambers, Halifax.

HAINE.—April 11.—For the carrying out of certain works at the porter's lodge and discharge block of the Thanet Isolation Hospital, Haine, near Ramsgate, for the Isle of Thanet Joint Hospital Board. Mr. H. Bertram Langham, architect, Bank Chambers, Broadstairs.

IRELAND.—April 23.—For building a pair of semi-detached villas at Upperlands Station, Coleraine, for Messrs. W. Clark & Sons, Ltd. Messrs. W. & M. Given, architects, Coleraine.

LONDON.—April 13.—For erecting walling and forming doorways in the basement of C block at their infirmary at Highgate Hill, for the Guardians of St. Mary, Islington. Deposit £2. Mr. E. J. Harrison, architect, 23 Berkeley Road, Crouch End, N.

NEWCASTLE.—For erection of new works. The Tyne Metal Co., Ltd., Skinnerburn Road, Newcastle-upon-Tyne.

PONTEFRACT.—April 7.—For the various works required in the pulling down and rebuilding of the Pineapple Inn, for Messrs. Carter's Brewery Co., Ltd., Knottingley. Send names by April 7 to Mr. W. J. Tennant, architect and surveyor, Pontefract.

SCOTLAND.—April 8.—For the slater work of new cattle courts to be erected at Burnside of Dipple and Dipple, and for the mason, carpenter and slater work of new cattle court at Berrybaunds, Enzie. Mr. D. J. Cunningham, factor, the Estate Office, Fochabers.

SCOTLAND.—April 10.—For (1) mason, carpenter and slater works for part of new offices at Roundhill (Auchnie), New Byth, and (2) mason, carpenter, slater and plaster works for new dwelling-house at Hill of Mill of Byth (Halket), New Byth. Messrs. Davidson & Garden, 12 Dee Street, Aberdeen.

SCOTLAND.—April 10.—For the several works required in connection with the construction of tunnels at Robroyston Hospital, for the Glasgow Corporation. The Office of Public Works, 64 Cochrane Street, Glasgow.

SCOTLAND.—April 12.—For rain-water conductors and iron drains required in connection with the extension of the municipal buildings, for the Glasgow Corporation. Deposit £1 1s. Mr. J. Lindsay, town clerk, City Chambers, Glasgow.

SELBY.—April 12.—For erection of thirty to 100 cottages, for the Urban District Council. Mr. B. Gray, C.E., F.R.S.(Edin.), Council Chambers, Selby.

WALES.—April 11.—For alterations to the Navigation Hotel, Aberfan, for the Rhondda Valley Breweries Co., Ltd. Mr. T. F. T. Jarvis, F.C.I.S., secretary, the offices of the Brewery, Pontypridd.

WALES.—April 15.—For alterations to the Ship and Bonded Stores, Cardigan, and the erection of a new stores, for the Swansea Old Brewery Company, Ltd. Mr. J. T. J. Williams, architect, Napier Street, Cardigan.

WIGAN.—April 13.—For erection and completion of a tool house in the Alexandra Park, Pemberton, for the Corporation. The Borough Engineer's Office, King Street West, Wigan.

WOODTHORPE (YORKS.).—For erection of a detached house at Woodthorpe, near Wakefield. Mr. W. Wrigley, A.R.I.B.A., architect, 2 King Street, Wakefield.

TENDERS.

ASPATRIA.

For the various works required in additions to the butcher's department of the Aspatria Industrial Co-operative Society, Ltd. Messrs. W. G. SCOTT & Co., architects, Workington.

Accepted tenders.

Davidson & Son, Aspatria, masons	£150 0 0
R. Bragg, Cumberland Street, Workington, joiner	108 11 5
T. Kirk, Maryport, plasterer	49 5 10
E. Burrow, Oxford Street, Workington, slater	25 11 7
G. Goodhall, Aspatria, plumber	12 16 8
G. Goodhall, painter	8 5 0

IRELAND.

For erection of a goods shed, for the Belfast Harbour Commissioners. Mr. T. S. GILBERT, M.I.C.E., Belfast.

H. & J. MARTIN, Ltd., Ormeau Road, Belfast (*accepted*).

NEWCASTLE-UPON-TYNE.

For the erection of a new wing at Rutherford Technical College.

S. F. Davidson (*accepted*) . . . £1,596 0 0

STAINLAND (YORKS.).

For the various works required in the erection of an engine-house, together with engine bed and foundations, at Dog Lane Mills, for Messrs. Wm. Sugden & Sons. Mr. C. F. L. HORSFALL, architect, Halifax.

Accepted tenders.

Balmforth & Riley, Queensbury, near Bradford, mason and concretor.

S. T. Holroyd, Stainland, near Halifax, joiner.

W. H. Heywood & Co., Bayhall Works, Huddersfield, constructional engineers.

L. Sandwell, Stainland, plumber and glazier.

J. Bancroft & Son, Winding Road, Halifax, plasterer.

W. L. Moores, Barkesland, near Halifax, painter.

Tunstalls Seyssel and Limmer Rock Asphalte Co., Ltd., Leeds, asphalter.

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Smith	399	7	6
J. MADDOCK, Wood Street (*accepted*)	359	10	0

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SOME PRINCIPLES IN INDUSTRIAL LIGHTING.*

(*Continued from last week.*)

By J. S. Dow.

A FEW years ago it would certainly have been difficult for any engineer to make these calculations without preliminary tests of the lighting units he proposed to employ. But at the present time leading companies issue polar curves of light distribution of their standard units, and it is therefore easy to calculate not only the illumination immediately under the lamp when hung at a prescribed height, but also the illumination at a given distance from it. If a lamp hung at a height h gives a candle-power I in the direction immediately below it, the resultant illumination under this lamp is I/h^2. If we next select a spot at a distance r from the point immediately below the lamp, and if the candle-power in that direction is I_θ, the resultant horizontal illumination is

$$E=\frac{I_\theta}{h^2}\cos^3\theta=\frac{I_\theta.h}{(h^2+r^2)^{3/2}}$$

These are formulæ which are perfectly familiar to lighting engineers, and can be applied by anyone with engineering knowledge. If we are dealing with two lamps in a row we can, by using the above formula, obtain the illumination from either at any point between them, and, by adding up, the resultant illumination due to both units.

The aim of the designer of a lighting installation is, as a rule, to adjust the distance between the two lamps so as to secure approximately even illumination between them; or, if he does not wish to do this, he can, by the above calculation, readily predict what the approximate variation will be.

Makers of modern lighting appliances, however, have simplified these calculations by furnishing information regarding the best relations between the height and distance apart of lamps in order to secure even illumination. Three distinctive types of distribution curves, corresponding with "extensive," "intensive," and "focussing" reflectors have been adopted, and anyone who adopts these methods can see from the data provided what the direct illumination with the lamps at a given height may be. It is true that in practice one cannot always adhere to these rules exactly, but as a rule the deviation resulting from a departure need not be large, and can, with a little trouble, be allowed for.

(In passing one might mention that, while one can easily get full information of this kind regarding direct lighting, similar data for indirect lighting are not usually obtainable. Would it not be practicable, in this case, to furnish data for the spacing of units, and possibly even approximate information as to the resultant illumination? Those who have had experience of indirect installations can form a fair estimate of the results from a given arrangement, but many engineers are less certain of the results than in dealing with direct lighting.

It will be observed that the above data refer to the direct illumination from the lighting units, and take no account of light reflected from walls and surroundings. It is here that less certainty is felt, although the experienced can form a very fair estimate of the added illumination, with a known type of lighting. In some cases an allowance may be made, but if little is known as to the nature of the interior in which the lights are to be installed, it is a safer plan to regard the added light by reflection as a margin of safety, with the comforting knowledge that the illumination will certainly not fall below the estimated value, and may exceed it by 25 or even in exceptional cases 50 per cent.

The general tables frequently given for calculating the effect of surroundings are, in the writer's opinion, not very valuable, because they do not take into account the size of the room or the variations arising through the use of particular types of units.

The following rough rule, given in the American "Code on Factory Lighting," is worth bearing in mind:—

"With modern lamps roughly one candle-power per square foot produces an effective illumination of 3 foot-candles when the lamps are arranged according to the uniformly distributed overhead system, with mounting heights ranging from 12 to 16 feet above the floor, and when the light is directed from the lamps to the work in an efficient manner."

The writer as the result of tests in average interiors during recent years has been accustomed to reckon general lighting installations on the following approximate basis. Naturally these data only apply to cases in which an even general illumination is aimed at, and typical properly designed lighting units are used; they are also subject to some modification when one is dealing respectively with very large or very small interiors. But they are fairly useful as a rough preliminary guide:—

Illuminant	System of Lighting	Specific consumption per lumen on working plane Cub. ft. per hr. per ft. candle per sq. ft. illuminated
Gas	Direct:	
	Low pressure	0·01—0·02
	High pressure	0·003—0·1
	Indirect:	
	Low pressure	0·02—0·04
	High pressure	0·005—0·02
		Watts per ft.-candle per sq. ft. illuminated
Electricity ..	Direct:	
	Tungsten lamps	0·2—0·3
	White arc and half-watt lamps	0·1—0·2
	Flame arc	0·05—0·1
	Indirect:	
	Tungsten lamps	0·4—0·6
	Arc and half-watt lamps	0·2—0·4

In these cases the illumination referred to is that on the working plane, *i.e.*, the level of the tables and benches where work is carried on. But it must not be inferred that the light directed on the surroundings is wasted. In many cases where the illumination of large vertical surfaces, diagrams, shelves, &c., is important the additional illumination shed in these directions by indirect and semi-indirect systems is a compensating advantage for the relatively lower illumination, for a given energy expenditure, on the working plane.

It may be observed that the proportion of the total amount of light reaching the working plane tends to increase as the area illuminated increases (assuming that lamps are kept at the same distance apart). For this reason one finds that in very extensive installations higher values of illumination are obtained than one at first sight would expect. At the other end of the scale one finds that very small interiors, with light walls, also give high results because much of the light emitted sideways is redirected on to the working plane.

Both in framing rules for the calculation of illumination, and in devising recommendations regarding the arrangements of lamps with respect to work, the avoidance of glare, &c., one has to draw a distinction between

* Introduction to discussion at a meeting of the Illuminating Engineering Society, held at the House of the Royal Society of Arts, 18 John Street, Adelphi, London.

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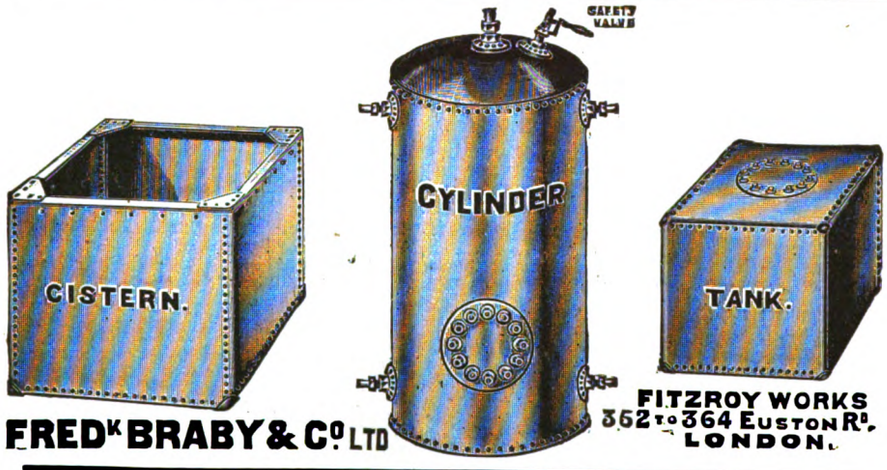
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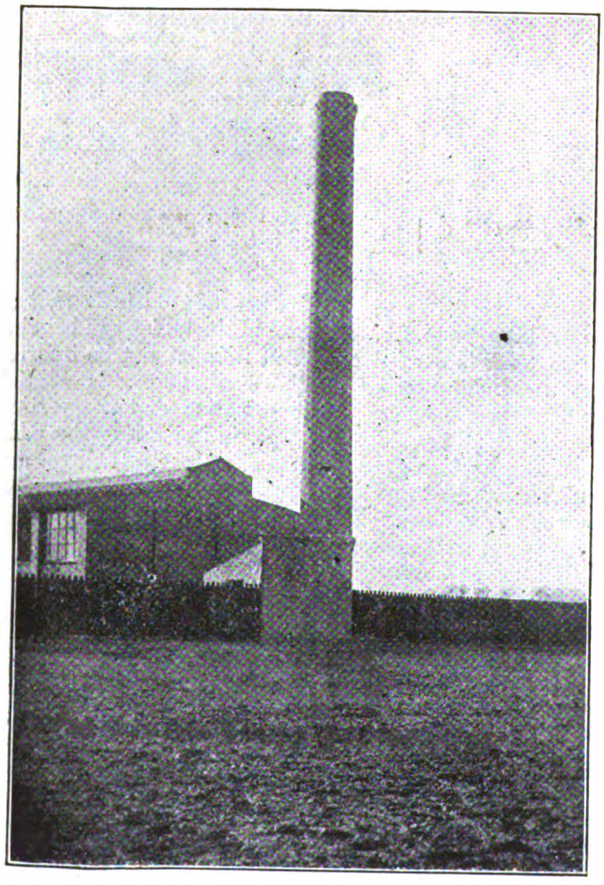
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general and local lighting. There is no doubt that the line of demarcation between these two methods has shifted considerably during recent years. It has been customary in the past to distinguish between the respective fields for employing for "general," localised-general," and "local" lighting. General illumination is admittedly the best system for a workroom when it is desired to illuminate the entire area of a workroom equally well all over. When a room is almost completely filled by rows of workers engaged on identical operations one should clearly aim at a well-diffused flood of illumination over the working area. It was formerly the custom to treat such rooms by pendant lamps over each individual machine or groups of machines, to allot so many lamps per bench, &c., the lights being usually of relatively small candle-power, and mounted only a few feet above the working level. The development of more highly efficient gas and electric units during recent years has quite changed this problem. The tendency now is undoubtedly to use more powerful lamps, if necessary, in suitably concentrating forms of reflectors, and to place them high up near the ceiling, at the same time taking full advantage of the reflecting power of light surroundings. This "overhead system" does away with long lengths of wire or piping, and leaves the room completely clear so that the foreman can see from end to end. This system is advantageous from the standpoint of avoiding inconvenient shadows, and it has the great merit that the position of benches and machinery can be altered without its being necessary to rearrange the position of lamps.

In rooms that are satisfactorily lighted on the above system the illumination requisite in the interests of safety will almost invariably be exceeded throughout. If the illumination is well diffused, and provision for local lighting of certain machines is made, one would even recommend general lighting in rooms which are filled with machines of different character, the floor space being completely occupied.

Local lighting is still regarded as essential in cases where the work is of a specially delicate character. For many operations a local light is needed, chiefly cases where the illumination must reach an exceptionally high value—such could not economically be provided throughout the entire room, or when the efficiency of the work depends on the play of light and shade, and the craftsman likes to alter the position of the material with regard to the light in order to detect small irregularities on its surface.

A good example of the transition stage from local to general lighting is afforded by offices. Formerly in large offices, banks, &c., every clerk had his own individual shaded lamp. More recently general diffused illumination has been introduced, and the development of illuminants certainly makes this system much more practicable than in days gone by. The local system is, however, still preferred in many offices, and it remains to be seen whether it will be displaced entirely. One point in connection with local lighting may be insisted upon, the provision of a moderate general illuminant in addition to the strong local lighting, so as to avoid undue contrast between the illumination of the work and the surroundings. A general value of at least 0.5—1 foot-candles might be suggested. On the other hand, when general illumination is used one must guard against too little contrast; one frequently hears it said that the eye likes to be "rested" by the gaze being transferred from the brightly illuminated work to the subdued surroundings. The physiological basis of this problem is still obscure, and requires further study.

(To be concluded.)

Mr. John Bell, of Breeze Hill, Bootle, Lancs, builder and contractor, who died on January 12 last, left estate valued at £67,922 (net personalty £61,909).

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 3,964. March 12, 1915.—W. E. King and the Gas Meter Co., Ltd., 238 Kingsland Road, N.E. Automatic lighting and extinguishing of gas lamps.

4,135. March 16, 1915.—Launcelot Ussher, 33 Exploration Buildings, Commissioner Street, and Armour Hall, 2 Loveday Street, Johannesburg. Connections for pipes, rods, tubes, and the like.

3,478. March 4, 1915.—J. A. Jensen, Steenstrups, Alle 3, Copenhagen, Denmark. Arrangement for drying the masonry in buildings and maintaining it dry.

3,575. March 5, 1915.—J. R. Quain, 17 Victoria Street, S.W. Electric radiators.

3,604. March 6, 1915.—John Spencer, Ltd., T. H. Spencer, and H. S. Smallman, Globe Tube Works, Wednesbury, Staffs. Pipe and like joints.

3,626. March 6, 1915.—M. E. Chamberlain, 414 Madison Avenue, Lebanon, Laclede, Missouri, U.S.A. Reinforced concrete or concrete-covered framed structures.

6,516. May 1, 1915.—J. H. Cartland, R. R. Harrison, 68 Constitution Hill, Birmingham. Stay fasteners for opening and closing casement windows, hinged doors, and the like.

5,118. April 3, 1915.—F. J. Kemp, Cherrington, Ross, Herefordshire. Adjustable gutter bracket.

5,275. April 7, 1915.—H. N. Davis and W. R. Twigg, Diamond Foundry, Luton, Beds. Gas cooking stoves.

5,289. April 8, 1915.—Ernest Griffiths, 138 Vauxhall Road, Liverpool. Ventilators.

7,085. May 11, 1915.—Aktieselskabet "Birram," 34 Lyngbyvej, Copenhagen. Seat for water closets.

7,538. May 19, 1915.—Mellie Esperson, 60 Rossonian Flats, Houston, Harris, Texas. Valves.

9,383. June 26, 1915.—G. C. Vernon-Inkpen, 40 Commercial Road, Portsmouth. Ventilators for windows and the like.

10,350. July 16, 1915.—Samuel Fildes, 7 Clarendon Street, Stockport. Electric-light fittings.

13,074. September 13, 1915. (Dated under International Convention, February 15, 1915.)—R. R. Grundy, 614 Sydney Road, Brunswick, Victoria. Plugs and plug sockets of baths, troughs, and other like articles.

14,746. October 19, 1915.—Automatic Telephone Mfg. Co., Ltd., Milton Road, Edge Lane, and C. H. Archer, 28 Holland Street, Fairfield, Liverpool. Electric heating apparatus.

3,276. March 1, 1915.—W. C. Merrill, 50 Congress Street, Boston, Mass., U.S.A. Method of and apparatus for heating and distributing asphaltic, bituminous, or viscous materials.

Any of the above specifications may be obtained from J. D. Roots & Co.

The Dunfermline Dean of Guild Court on Tuesday passed plans presented by the Scottish National Housing Company for 239 houses to be built at Rosyth. The houses are of different types in order to meet the requirements of the different classes of workers, but most of them will be cottages. Plans were also passed for roads and sewers in connection with the houses, which are estimated to cost between £60,000 and £70,000.

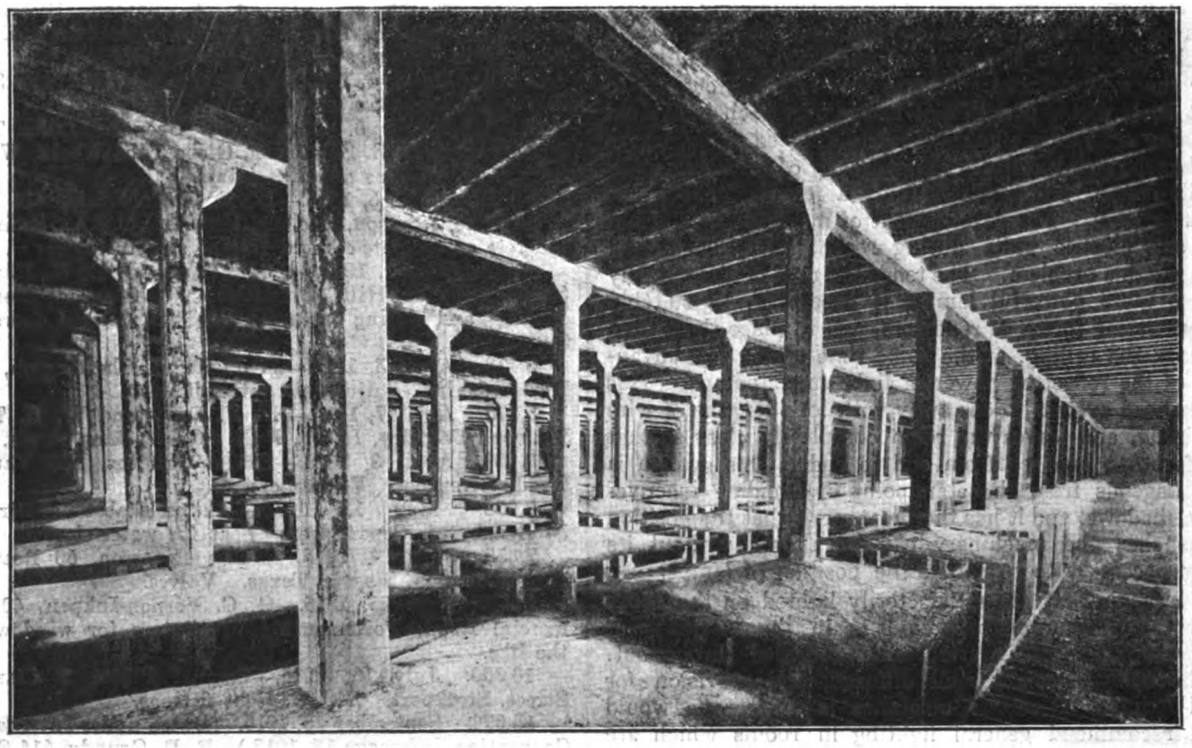
A report from St. John, New Brunswick, states that that city is preparing to enter upon the business of building houses for the benefit of the workmen who reside there. A Bill giving the city the necessary powers had been drafted, and has been forwarded to the Provincial Legislature by the City Council of St. John. The Bill gives the city power to expropriate lands as they may be required and to erect houses suitable for the homes of working men. It provides for the issuing of bonds to cover the cost of purchase and erection, and sets forth an easy payment scheme under which the properties may be acquired by the citizens.

The death has occurred of Mr. Leslie Ower, F.R.I.B.A., familiar in business circles in Dundee as the senior partner of the firm of Messrs. Leslie Ower & Allan, architects and civil engineers, Whitehall Street. Mr. Ower, who was sixty-five, and had just retired from active business life, had latterly been in failing health, and his death has not come unexpectedly. He was trained in the office of his father, who at the time was harbour engineer. He entered into partnership with his elder brother, Mr. Charles Ower, and the firm subsisted for many years and carried through many public and private undertakings. He was actively engaged at business until the beginning of the present year.

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REINFORCED CONCRETE AS APPLIED TO WATERWORKS CONSTRUCTION.

READERS of our report of a lecture which was recently given before the Concrete Institute by Mr. Charles F. Marsh, M.Inst.C.E., &c., Vice-President, under the above heading ("The Architect," March 10), will be further interested in a photograph of a Canadian reservoir which we reproduce.



Mr. Marsh suggested, in cases where there was sufficient thickness of concrete, that it should be mixed 3 : 1½ : 1, but the proportions of the concrete for this reservoir were 4 : 2 : 1. Considerable money was saved in its construction by using Pudloed cement concrete. Searching tests were made with Pudlo and eleven other waterproofing methods before the work was proceeded with. Concrete composed of 4 : 2 : 1, with a percentage of the respective waterproofing compounds, were subjected to a water pressure of 140 lb. per square inch; with the exception of Pudlo, all other mediums were unable to stand the test. The reservoir has a capacity of 18,000,000 gallons, and is the largest in Canada.

The manufacturers of "Pudlo," Messrs. Kerner-Greenwood & Co., King's Lynn, inform us that they will be pleased to send further particulars of this economical method of waterproofing concrete to any interested person.

VARIETIES.

AT a meeting of the Archdeacons and Rural Deans of the Diocese of Llandaff, held at Cardiff, the present surveyors under the Ecclesiastical Dilapidations Act—Mr. G. E. Halliday, F.S.A. (Cardiff), and Mr. Henry J. Griggs, A.R.I.B.A. (Newport)—were re-elected for the Archdeaconries of Llandaff and Monmouth respectively.

THE Public Library Committee of the York Corporation have been informed that the Carnegie United Kingdom Trust are prepared to make a grant of £12,000 towards the erection of a public library in place of the existing one in Clifford Street. The work will probably be delayed until the end of the war.

THE proprietorship of *The Connoisseur* has, after a period of some sixteen years, reverted to the founder, Mr. W. Claude Johnson. Mr. Johnson, who is a civil engineer by profession, is an enthusiastic art collector. Mr. C. Reginald Grundy, who has been editor of the journal for the past eighteen months, will continue in that position. The offices of *The Connoisseur* will in future be at 1 Duke Street, St. James's.

BY the casting vote of the Chairman, the Liverpool Arts Committee have decided to recommend the City Council to rescind their resolution suspending until the conclusion of the war the autumn exhibition at the Walker Art Gallery, and that the offer of anonymous gentlemen to defray all cost of the exhibition, apart from establishment charges, should be accepted, the whole of the receipts to be given to war funds. The arguments adduced against the re-opening of the exhibition were that the municipality ought to concentrate its energies on national service.

THE Town Planning Committee of Edinburgh Town Council is being asked to review the whole policy of town planning as applicable to the city. The motion was brought forward recently by Councillor Deas, who suggested that the Council should endeavour to get fuller information by calling in outside expert opinion to help them. This might be done either by employing some well-known authority to draw up a plan or by public competitive plans. The committee will consider the matter.

THE office of resident director of the National Gallery of Ireland, to which a salary of £500 a year and travelling expenses up to a maximum of £150 was attached before the war, will be vacant in June next. The Treasury has reduced the remuneration for such office of director to £350 per annum and travelling expenses up to a maximum of £100, both reductions to continue during the war. Candidates for the office are requested to send in their applications to the Director, National Gallery, Dublin, before the 1st day of May.

THE Edinburgh Architectural Association paid its first visit of the season on Saturday last to St. Mary's (Episcopal) Cathedral, Edinburgh. The edifice was raised from funds bequeathed by the Misses Walker of Coates and Drumsheugh in 1870. The buildings were commenced in 1874, and completed in 1879, when the cathedral was consecrated on October 30, 1879. The architect was the late Sir Gilbert Scott, and the design is founded on the early pointed style. The western towers are now being built, the south-west tower being completed, and the north-west tower is in progress. The chapter house contains the library bequeathed by the late Bishop Dowden. The central tower contains a fine peal of ten bells, and the bellringer's chamber is one of the best appointed in Britain. The competitive plans for the cathedral are exhibited here. Fine views of the city can be seen from the gallery of the tower. The axis of the cathedral coincides with the centre of Melville Street, and it is built of Dunmore and Polmaise freestone.

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THE

Architect and Contract Reporter.

FRIDAY, APRIL 14, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval,

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITION OPEN.

DUBLIN.—June 15.—The Senate of the National University of Ireland invites designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2s. deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

NOTICE.

Next Friday being Good Friday, THE ARCHITECT *will be published on Thursday. All advertisements intended for this Number must reach the Office not later than* 4 P.M. *on Wednesday, April* 19.

No alteration of advertisement copy can be allowed after Saturday morning, April 15.

CONTRACTS OPEN.

EBBW VALE.—April 17.—For proposed alterations and additions to the fire station, Ebbw Vale, for the Urban District Council. Deposit £1. Mr. T. J. Thomas, surveyor, District Council Offices, Ebbw Vale, Mon.

IRELAND.—April 23.—For building a pair of semi-detached villas at Upperlands Station, Coleraine, for Messrs. W. Clark & Sons, Ltd. Messrs. W. & M. Given, architects, Coleraine.

KEIGHLEY.—April 19.—For the erection of temporary hospital buildings, comprising two 100-bed blocks (180 ft. by 46 ft.), recreation hall, hospital supplies block, kitchen offices, &c. Messrs. Moore & Crabtree, architects, Keighley.

LOWCA.—April 22.—For various works required in erection and completion of two dwelling-houses in Stamford Hill Avenue, Lowca, Cumberland, for the Harrington Coke Ovens Company, Ltd. Mr. C. W. Eaglesfield, architect, Workington.

SALFORD.—April 17.—For extensions to switch house and foundations for same, for the Electric Department. The Borough Electrical Engineer, Frederick Road, Pendleton.

WALES.—For erection of premises adjoining the Plough Inn, Grenfield, Holywell, Flints. Deposit £1. Mr. F. A. Roberts, M.S.A., Earl Chambers, Mold.

WALES.—April 15.—For alterations to the Ship and Bonded Stores, Cardigan, and the erection of a new stores, for the Swansea Old Brewery Company, Ltd. Mr. J. T. J. Williams, architect, Napier Street, Cardigan.

TENDERS.

GRASSINGTON.

For the various works required in erection of a branch shop at Grassington, for the Skipton Co-operative Society, Ltd. Mr. JAMES HARTLEY, architect, Skipton. Quantities by the architect.

Accepted tenders.

T. T. Chapman, Skipton.
W. V. Patrick, Grassington.
F. Bayley, Grassington.
G. H. Mason & Sons, plumbers, Skipton.
A. Shuttleworth, Skipton.
Total amount of tenders, £1,100.

MORLEY.

For bricklayers', joiners', plumbers', plasterers', and slaters' work required in re-erection (after fire) of three-storey mill premises at Deanfield Mills, for Mr. James Barker. Mr. T. A. BUTTERY, Licentiate R.I.B.A., architect and surveyor, Morley.

Accepted tenders.

Chain Concrete Syndicate, Leeds, reinforced concrete	£937	0	0
Lazenby Bros., Leeds, joiners' work, general	440	0	0
,, ,, ,, floors	275	0	0
Harrison Spensley, Morley, masons' work	406	11	6
John Atkinson & Son, Leeds, slaters	149	0	0
Benjamin Gomersall, Morley, plumbers' work	102	9	8
John Iredale & Son, Birstall, plasterers' work, concrete floors	100	0	0
France & Brook, Scarthwaite, ironfounder	75	0	0

CRYSTAL PALACE SCHOOL OF ENGINEERING.

ON Thursday, April 6, the award of certificates for the Easter term took place at the Crystal Palace Engineering School, on which occasion the chair was taken by Mr. J. Patten Barber, M.I.C.E., past president of the Society of Engineers, and additional interest attached to the gathering by reason of it being the 130th and last distribution of certificates at the Crystal Palace, where the school has been conducted for forty-three years, as Mr. J. W. Wilson, M.I.C.E., the principal, in conjunction with Mr. Maurice Wilson, are moving to a commodious establishment on Anerley Hill, near the South Tower, where the school will be continued under the old prestige.

After the very gratifying reports of the Examiners (Mr. H. J. Tingle, M.I.C.E., Member Council Concrete Institute, and Mr. S. H. White, A.M.I.C.E.) had been read by Mr. Maurice Wilson, an eloquent and earnest address was given by Mr. J. Patten Barber, who subsequently handed to the individual students the certificates which they had so well earned.

The Principal (Mr. J. W. Wilson) in feeling terms referred to the removal which was about taking place,

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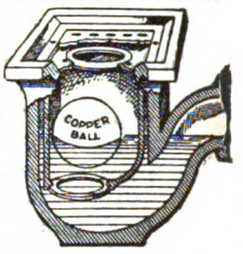


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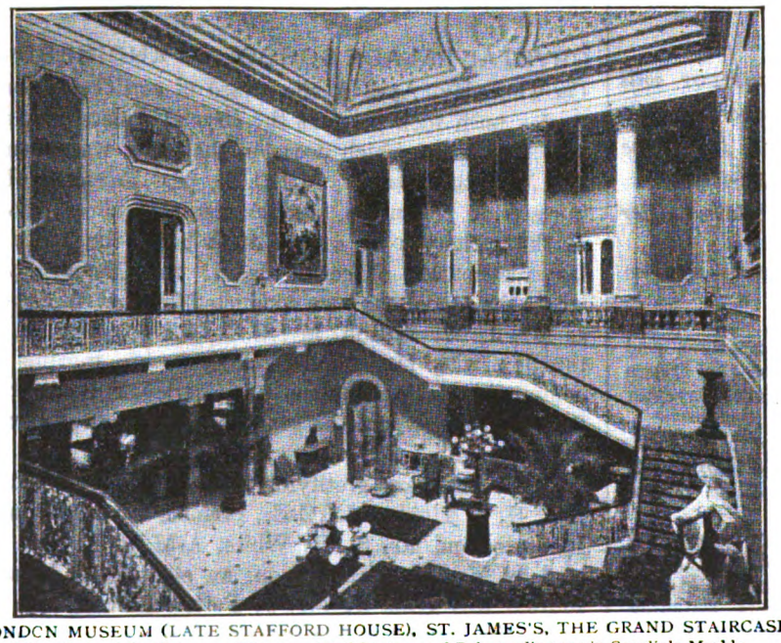
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and said that although they were going to leave the Crystal Palace, they were not going back, but going forward. He felt confident that in their new premises their old reputation would be sustained and enhanced. Mr. Wilson added that there were upwards of 200 students on the Roll of Honour in the fighting line, and four of them had already got the Military Cross.

Hearty thanks were accorded to the examiners and the chairman for their services in connection with the occasion, and Mr. Cameron Brock on behalf of the students thanked the principal and vice-principal for their kindness and efficient instruction.

The Certificate of Honour (for six certificates obtained in the school course), it may be added, was awarded to Mr. E. D. Dubugras, while the Wilson Premium for a paper read before the Crystal Palace Engineering Society, on concrete, was won by Mr. H. M. Wilson.

SOME PRINCIPLES IN INDUSTRIAL LIGHTING.*

(Concluded from last week.)

By J. S. Dow.

IT is sometimes said that the so-called "localised-general" lighting is destined to disappear entirely, and that presently we shall have only local or general illumination, or a combination of the two. At the present time, however, there seems to be classes of rooms where something resembling localised general lighting is inevitable. For example, in rooms where the ceiling is low it may be impracticable to produce well-diffused general illumination throughout the room, and the right course is therefore to attend to the requirements of the various machines, if necessary, supplementing this system by extra intermediate lights where necessary to bring up the floor-illumination to a safe level. Individual lights for certain machines or tables are again used in those workrooms (more common in provincial and country districts than in London) where large portions of the floor are left unoccupied, and the manager does not see the necessity for providing a strong illumination except at the places where actual work is going on. Basement printing works often fall in this class, partly on account of the nature of the work, partly owing to the ceilings being in general low. In other cases the nature of the work makes it necessary to leave large free spaces for material to be transferred from lifts and unpacked; in yet other cases it may happen that only certain machines are used at the same time, and the whole floor is never at work simultaneously. In such cases the lighting must be "sectioned," even if on the general system.

As an instance of an industry where local lighting seems likely to be replaced by general illumination, one may take clothing factories. Here we usually find that an entire room is occupied by rows of sewing machines doing almost identical operations, but the illumination requires to be exceptionally high, especially when dark materials are used, and local lighting has therefore been hitherto largely employed. In one of the very latest factories now working on khaki material, general lighting with half-watt lamps has now been adopted.

In one room the consumption is about 1.25 watts per square foot of floor area, and the general illumination is 10-12 foot-candles. (This value is somewhat higher than is actually needed, owing to the fact that at the time the installation was made only 300 watt "half-watt" lamps were available.)

In the second room the consumption is 0.75 watts per square foot, and the illumination 7-9 foot-candles. The provision of such a high general illumination is somewhat unusual, but has proved very advantageous, and is adapted to the finest work and the darkest materials. The spacing of the lights in appropriate reflectors, and the good reflection from the light surroundings, enables any ordinary kind of work to be done, whereas with the old system of local lighting there were certain operations (sewing button holes, for example), which were hampered by inconvenient shadows.

In spite of the lavish illumination the running cost of the lighting is very reasonable. In most industries where highly skilled operations are carried on the cost of lighting forms only a small proportion of the turnover.

The above example is interesting as a change from local to general illumination. The problem of lighting sewing machines can, however, be met in quite a different manner—namely, by the use of very small lamps, mounted close to the needle of the machine, so as to constitute a variety of "special local lighting."

The varied applications of local and general lighting are also well exemplified in machine shops. In an erecting shop a good general illumination is necessary as a basis. Even here, however, portable lamps may be desirable for close inspection of special work, while it would generally be agreed that lathes and benches require either local or localised general lighting. For fine work, ability to adjust the position of the light is of importance, and in deep boring it may even be an advantage to have a small light which can be actually inserted into the aperture.

In these cases, and likewise in the illumination of drilling and planing machines, the direction from which the light comes is important, and good general illumination alone is probably hardly sufficient. Automatic machinery is really a special case in itself, in view of the fact that the special local illumination is really only required in setting the tool and arranging the work; once the machine is set in operation a moderate general illumination suffices. This illustrates the distinction between "inspective" and "detective" work drawn by the Committee.

Another circumstance that has favoured the use of general illumination for factory lighting is the simplification of machinery and diminution of shafting and belts, owing to the application of local electric driving. Generally speaking, in machine shops where there are a large number of moving belts and overhead shafting general lighting is inapplicable, owing to the interruption and flickering shadows caused by these moving objects; local lighting must therefore be used. The same applies to weaving rooms in textile mills, except that the method in this case might more fitly be described as localised general lighting, seeing that one light is commonly allotted to two or four looms. But here again in the very latest mills the obstruction to light from above has been diminished, and a well diffused system of general lighting might in this case be practicable.

Greater is the importance of reflected light from the surroundings. Attention to this point will assist almost all the requirements of the Home Office Committee, and will do much to compensate for unsatisfactory features in the design. This reflected light is most valuable in strengthening the illumination in parts of the room most remote from the lamps, and keeping it above the minimum necessary for safety. In addition, it is now recognised that most objects cannot be completely seen unless they are illuminated from many different directions. It is the absence of these reflected rays which makes outdoor lighting such a difficult matter, even when the illumination is from a photometric standpoint relatively high and uniform. So well is this recognised that in some factories in the United States, not only the ceiling and walls, but also the floor and the non-moving parts of machinery, are painted in a light colour. Something might also be learned from the prevailing conditions in our streets. The practice of using whitened kerbs might be copied more frequently in the case of platforms, stairways, &c., and in all places where a fall might have serious consequences.

* Introduction to discussion at a meeting of the Illuminating Engineering Society, held at the House of the Royal Society of Arts, 18 John Street, Adelphi, London.

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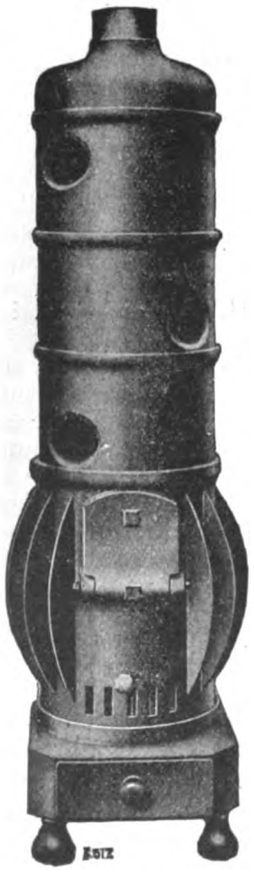
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INSTITUTE OF BUILDERS.

THE thirty-second annual general meeting was held at Koh-i-Noor House, Kingsway, W.C., on Wednesday, March 29.

The audited accounts for the year ending December 31, 1915, and the annual report were read and adopted, the latter being enlarged upon by the President (Mr. Edward J. Strange).

The following elections were made:—*President.*—Mr. Leonard Horner (London). *Vice-President.*—Mr. Samuel Smethurst, J.P. (Oldham). *Treasurer.*—Sir Herbert H. Bartlett, Bart. (London). *Hon. Auditor.*—Mr. A. W. Sinclair, J.P. (Scarborough). *Executive Council.*—Captain R. J. Holliday (London—re-elected), Captain F. M. May (London—re-elected), Mr. R. B. Chessum (London—elected), and Mr. Samuel Salter (Southsea—elected).

The Executive Council for 1916-17 consists of:—*President.*—Mr. Leonard Horner (London). *Vice-Presidents.*—Mr. C. Bird Godson (London), Mr. Walter Lawrence (London), Mr. Edmond J. Hill (London), and Mr. Samuel Smethurst, J.P. (Oldham). *Past Presidents.*—Mr. Frank May, J.P. (London), Mr. Thomas F. Rider (London), Sir Herbert H. Bartlett, Bart. (London), Mr. F. J. Dove (London), Sir John M. Burt, J.P. (London), Colonel G. H. Trollope (London), Mr. William Shepherd (London), Mr. Henry Holloway, J.P. (London), Mr. William F. King (London), Mr. Benjamin I. Greenwood (London), Mr. F. L. Dove, L.C.C. (London), Mr. James Carmichael, J.P. (London), Mr. William F. Wallis, J.P. (Maidstone), Mr. F. Higgs (London), Mr. James S. Holliday (London), Mr. H. Arthur Bartlett (London), Mr. Ernest J. Brown (London), Mr. F. G. Rice (London), and Mr. Edward J. Strange (Tunbridge Wells). *Ordinary Members of the Council.*—Mr. R. B. Chessum (London), Mr. A. B. Falkner (London), Mr. F. J. Gayer (London), Captain R. J. Holliday (London), Captain F. M. May (London), Mr. G. H. Parker (London), Mr. W. J. Renshaw (London), Mr. S. Salter (Southsea), Mr. H. P. Shepherd (London), Mr. F. Shingleton, M.V.O. (London), Mr. W. Thomas (Cardiff), and Mr. A. W. Turnbull (London).

The thirty-second annual report was as follows:—

The building industry is passing through a critical period in consequence of the European war.

Operations of a purely building character are being carried out under difficult conditions and, in many instances, have been suspended. A very large number of operatives usually engaged in the trade have either obtained employment on war work or have joined His Majesty's forces.

The wages paid for war work have been much in excess of those paid in normal times and have exerted a marked influence upon other callings.

The difficulty of obtaining skilled and unskilled labour is increasing. If there is any substance in wide rumours the situation promises to become even more acute in the near future, as the demand of the Government for more workers in munition preparation is becoming more and more exacting.

To this may be added the embargo which is to be placed on the importation of certain kinds of building materials.

There is little doubt that the enhanced prices of building materials and the scarcity of suitable labour will last until the end of the war and for some time after peace is proclaimed.

Builders realise the continued necessity of supporting the Government in every possible way and that it must be assisted and not hindered in its efforts to meet so unprecedented a situation, however much general occupations may suffer.

There is a serious element of social danger in the future in consequence of the lessened income which will result to workpeople when the Government labour demands revert to normal conditions.

The War.—We hail, with national pride, the action of our fellow-countrymen, including many of our members and their sons, who have placed their services at the disposal of the King and country; all have won renown, several have been honoured with war distinctions, and some have made the supreme sacrifice.

Apprentices.—Fully realising the necessities of the building trade to make provision for its future welfare, the Council has given its earnest attention to the question of apprentices. Wherever valuable co-operation could be obtained, strenuous efforts have been made to secure it. Schemes have been formulated and copies forwarded to various governing bodies. At present the difficulties to contend against are very great, as mere boys are now able to earn in temporary occupations more than they are likely to earn as adults in ordinary employment. Much consideration and care is being given to the evils that will inevitably arise from present "dead end" employment, in order to provide for a period when vast numbers of skilled and unskilled workmen will be needed for separate trades. To meet such an emergency the Council has endeavoured to prosecute its scheme to induce boys to become apprentices and to encourage parents not to take the immediate advantage of placing their sons in occupations and in trades in which there is no profitable future.

The present is not, perhaps, the precise time to introduce reforms, but it certainly is a time to prepare for the future, and sow the seeds of a coming harvest. It, therefore, behoves all who are interested in the ultimate success of trade ventures to get things in readiness for future practical application.

At the request of the Board of Trade Advisory Committee for Juvenile Employment, a deputation waited upon that Committee and discussed the Institute of Builders' Apprenticeship Scheme, special emphasis being laid upon the necessity of technical school instruction and practical workshop experience being available for the craftsmen of the future.

To further the interests of apprenticeship it has been decided to present annually a silver and a bronze medal to the most successful students of the City and Guilds of London Institute in our Overseas Dominions, Colonies and Dependencies, in addition to the medals and money prizes now given to students in the United Kingdom. It has also been decided to award a silver medal each year—as a special prize for general efficiency in the theory and practice of building—to one of the students attending the Brixton L.C.C. Junior Day Schools, who shall be recommended by the Brixton School of Building.

Form of Contract.—Some time has passed since this Institute approached the R.I.B.A. with a view to the formulation of an agreed Form of Contract more in consonance with modern requirements than the Form now in vogue, and to which even the R.I.B.A. itself has suggested certain amendments.

At the request of the Practice Committee of the R.I.B.A., your President and Secretary, together with the President and Secretary of the National Federation of Building Trades' Employers, attended a conference upon the subject. It transpired that the R.I.B.A. has formulated a revised Form of Contract, the "draft" of which it has promised to forward, when ready, to the Institute for consideration. Some months have elapsed since this undertaking was given, but it has not yet been received. Efforts have been made by your Council to suspend any opposition that might be offered rather than take any action which might hamper the production of a revised form. Great patience has been shown, but in some parts of the country active steps have been taken to formulate, in conjunction with local governing bodies and architects, local Forms for local use. Any step taken in providing an alternative Form of Contract is to be deeply regretted, in view of the fact that the Agreed Form has been, and continues to be, increasingly used, and it is to be hoped that when the revised document is submitted, it will become mutually acceptable.

Sub-Contract.—A Special Committee has been appointed, and is thoroughly taking up this matter, in

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co-operation with the National Federation of Building Trades' Employers, in conference with the London Master Builders' Association and representatives of Sub-Contractors' organisations, with the hope of producing a Form that will be agreeable to all parties concerned. The different conditions under which sub-contractors in London and those in the provinces work is fully appreciated, and it has been suggested that two Forms should be drawn up—one for sub-contractors to be appointed under Clause 19 of the Agreed Form of Contract, and one for Specialists and others under Clause 20. This action has been made necessary because the R.I.B.A. has declined to produce, authorise, or agree any Form of Sub-Contract.

Mr. W. H. Hope (Solicitor, Sunderland), has been appointed legal adviser to the Joint Committee, and it is hoped that this Committee will very shortly be able to fully report the result of its deliberations.

Rise in Cost of Building Materials.—The rise in prices of building materials has been very marked since the commencement of the war, and is anticipated to further increase through the limitation to be placed on imports. From all over the country complaints of this have been received, but very little can be done to ameliorate the case under the circumstances.

The rise seriously affects some contracts entered into before the war to which no easement has been obtained from architects and building owners. This is to be deeply regretted, as it involves contractors in serious loss.

Grants from the I.O.B. Benevolent Fund.—The following grants were made during the past year:—

1. Builders' Benevolent Institution ...	£50	0	0
2. Builders' Clerks' Benevolent Institution	10	10	0
3. Provident Institution of Builders' Foremen and Clerks of Works ...	10	10	0

Insurance against Risks from the King's Enemies.—Every attention has been given by the Council to the question of responsibility as to insurance against risks from the King's enemies in connection with pre-war contracts. Some building owners, after considerable correspondence, have agreed to bear the whole cost of the insurance premium. H.M. Office of Works have agreed to bear one-half the cost.

Timber Specification.—The R.I.B.A. forwarded a timber specification with the request for the Council's criticism. A Committee was appointed who, in conference with representatives of the Timber Trades' Federation, jointly amended its provisions and submitted these to the R.I.B.A.

The R.I.B.A. writes to say that its Committee submitted its report to the Council, which decided to take no further action "as it is of opinion that, in consequence of conditions arising out of the war, the present time is not opportune for making regulations which, in all probability, could not now be carried into effect. It is proposed to resume consideration of the matter at the termination of the war."

Annual Dinner.—In consequence of the war the Council decided not to hold the annual dinner this year.

UNITED KINGDOM TRADE WITH AUSTRALIA.

IN accordance with the practice that has been established for H.M. Trade Commissioners in the British self-governing Dominions to visit the United Kingdom officially from time to time, so that manufacturers and merchants may have the opportunity of consulting them on any matters connected with their business, or of obtaining information as to the possibilities of extending their trade, H.M. Trade Commissioner for Australia (Mr. G. T. Milne) is now in this country, and is interviewing (by appointment) representatives of firms who have expressed a desire to see him in London at the offices of the Commercial Intelligence Branch of the Board of Trade. Mr. Milne will attend at the offices of the London Chamber of Commerce on April 17, 18, and 19, and immediately after Easter will commence to visit those trade and industrial centres in the provinces which have been decided upon as most advantageous to visit in view of the applications that have been received from firms in or near those centres, and from Chambers of Commerce.

According to the notice in "The Board of Trade Journal," the itinerary of H.M. Trade Commissioner's tour, the arrangements for which have now been completed, includes Bristol, Newport (Mon.), Cardiff, Birmingham, Wolverhampton, Walsall, Coventry, Leicester, Nottingham, Derby, Stoke-on-Trent, Dublin, Liverpool, Manchester, Sheffield, Huddersfield, Bradford, Leeds, Newcastle, Edinburgh, Dundee, Dunfermline, and Glasgow, in the order named.

VARIETIES.

THE scheme for the erection of workmen's dwellings in Clydebank being at present in abeyance on account of the war, the Town Council have decided, in view of the necessity for the utilisation of all available ground in the production of food supplies in war-time, to lay out the ground required for the building of such houses at Kilbowie for a potato crop. The ground in question is about 14 acres in extent.

FOR the second time the continuity of the Liverpool Autumn Art Exhibition has been preserved by the liberality of private citizens. Last year, having regard to war time economy, the City Council decided to abandon the exhibition, but rescinded their resolve on the offer of Mr. F. C. Bowring to pay all the costs and hand the proceeds to the Red Cross funds. This year again the decision was made for the same reasons against holding the exhibition. Mr. Bowring, however, has once more come forward, now associated with some friends, with a similar offer. The Council recently reversed their decision, and the exhibition will be duly held.

IN a report to the Burnley Water Committee on the Hurstwood reservoir, now in course of construction, a London firm of engineers state that from a recent examination of the main trench timbers "we regret to find that they have now attained a condition which cannot be regarded otherwise than extremely unsatisfactory. . . . We have no desire to create alarm, but we should fail in our duty if we did not specially direct attention to the urgent character of this part of work which demands precedence over every other work." At a recent meeting of the Burnley Town Council it was stated that the Corporation had spent about £190,000 on the Hurstwood reservoir, and that it would require another £60,000 to make the reservoir safe, and £160,000 to finish it.

MR. HARRY HEMS, of Exeter, who died on January 5, left estate of the gross value of £13,027. In his will he desired to be buried in a coffin of wainscot oak oiled, with no brass fittings, and he was to be carried to his grave by those who had been longest in his employ, his studios to be closed for the day, and the employés attending his funeral receiving full-time wages. He also desired that the "Chicago Rood" beam should be placed in the chancel of St. Sidwell's Church, and the following inscription placed thereon: "This 'Chicago Rood' beam was made by Harry Hems, sculptor, of this parish, who lived and flourished here from 1869-19 -, and died—having received the highest attainable honours awarded at the World's Fair, Chicago, 1893, and the gold medal at the International Exhibition, Antwerp, the following year for the work."

THE Engine-room Heroes Memorial, erected by international subscription on the pier-head at Liverpool, is now almost complete. The structure is of grey granite with the exception of the top portion, which is of gilt metal. The total height is 45 ft. The treatment adopted by the sculptor is symbolic, the "motif" chosen being the contending natures of fire and water. On two faces of the lower portion are sculptured groups of engineers and firemen. On the angles of the upper portion of the base are four figures representing the elements of fire and water, encircled by designs of the ocean surrounding the world, with symbolic designs of flames rising above the horizon. This is surmounted by an obelisk, on the top of which are four figures rising out of the sea, representing the spirits of the ocean supporting a flaming torch, symbolic of the triumph of fire over water. The memorial is said to be unique in this country, being the only one of such dimensions carried out entirely in granite. The work has been carried out by Sir William Goscombe John, R.A.

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THE

Architect and Contract Reporter.

FRIDAY, APRIL 21, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

**** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITION OPEN.

DUBLIN.—June 15.—The Senate of the National University of Ireland invites designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2s. deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

BEULAH (CARDIGAN).—April 27.—For erection of school, Beulah. Mr. G. Dickens-Lewis, Licentiate R.I.B.A., M.S.A., county architect, Aberystwyth.

CARDIGAN.—April 29.—For repairs to Mount Church, near Cardigan, for the Rev. J. Jones. Mr. G. T. Bassett, A.R.I.B.A., architect, 13 North Parade, Aberystwyth.

COWES (I.W.).—April 25.—For alterations to 18 High Street, Cowes (I.W.), for Messrs. Timothy White Company, Ltd. Tenders must be sent to 30 Chandos Street, Portsmouth.

CWM (MON.).—May 1.—For erection of caretaker's house at Duffryn Schools, Cwm, for the Ebbw Vale Education Committee. Deposit £1. Mr. T. Hughes, secretary, Council Offices, Ebbw Vale.

HUNTINGDON.—April 21.—For rebuilding a wall at the Huntingdon Workhouse, for the Guardians. Mr. G. Hunnybun, deputy clerk, Huntingdon.

KEIGHLEY.—May 6.—For construction of a pumping engine-house at the Fleece Mill Company's works, for the Keighley Corporation. Mr. S. Terry, town clerk, Town Hall, Keighley.

PONTYPOOL.—April 28.—For the erection of a garage and stables situated in "Steep Field," Abersychan, near Pontypool, for the Abersychan Co-operative Society, Ltd. Deposit £2 2s. Mr. C. F. J. Wilton, architect and surveyor, Midland Bank Chambers, Pontypool.

PONTLOTTYN.—April 24.—For rebuilding the Railway Inn, Pontlottyn, for Messrs. A. Buchan & Co., Rhymney. Mr. T. Roderick, architect, Ashbrook House, Aberdare.

RYDE (I.W.).—April 25.—For alterations to 71 High Street, Ryde (I.W.), for Messrs. Timothy White Company, Ltd. Tenders can be received at the head office of the Company, 30 Chandos Street, Portsmouth.

WEST HARTLEPOOL.—April 28.—For erection of a brick chimney shaft in connection with the electric power station, for the Corporation. Mr. N. F. Dennis, M.I.C.E., borough engineer, Municipal Buildings, West Hartlepool.

WIGAN.—May 1.—For an extension of the Market Hall. Specification, bills of quantities, and form of tender on application to Mr. A. T. Gooseman, Borough Engineer, King Street, Wigan.

TENDERS.

GREENWICH.

For the construction of foundations, &c., for the third additional turbo-generator to be installed at the Greenwich generating station, for the London County Council. Based on a schedule of prices for comparative purposes.

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W. Downs (*accepted*)	4,751 0 0
Architect's estimate	4,500 0 0

LONDON.

For repair of ninety-one houses on the Roan Estate, Greenwich, for the Roan Trustees.

W. Manners (*accepted*)	£228 0 0

SWANSEA.

For laying water main at Mumbles, for the Swansea Town Council.

B. Jones, Neath (*accepted*)	£2,855 1 0

For electric lighting at the Brynmill and Cwmbwrla Council Schools, for the Town Council.

Thomas & Evans (*accepted*)	£530 0 0

WALES.

For constructing a thoroughfare from St. Mary Street to Westgate Street, for the Cardiff Corporation. Mr. W. Harpur, M.I.C.E., city engineer.

Maberley Parker, junr.	£435 3 8
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Barnes, Chaplin & Co.	373 9 7
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Lewis Bros., Dinas Powis (*accepted*)	302 8 2

For alterations to 62 and 63 Dunraven Street, Tonypandy. Mr. E. I. Evans, architect, Tonypandy.

E. R. Evans Bros.	£498 10 0
W. Spratt, Trealaw	458 0 0
T. Lewis, Tonyrefail	451 7 0
J. Thomas, Porth	450 0 0
J. Lovatt, Penygraig, Rhondda (*accepted*)	415 0 0

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 24,278. December 18, 1914.—Robert Thomson, 164 Nithsdale Road, Pollokshields, Glasgow, architect. Dwelling-houses.

4,487. March 22, 1915.—Arthur Kitson, Austin Noblett, and the Kitson Empire Lighting Co., Ltd., Wharf Road, Stamford. Installations for lighting by means of vapour burning lamps.

4,627. March 24, 1915. (Dated under International Convention March 24, 1914.)—J. H. van der Meiden, van Persynstraat 3, Amersfoort, Holland. Stoves.

6,136. April 24, 1915.—Hugh McCreath, 170 Hope Street, Glasgow. Tar-thinning apparatus.

5,660. April 15, 1915.—A. R. Banks, Churchfield, West Bromwich, and Albert Bye, 298 High Street, West Bromwich, architect and surveyor. Reinforcement of concrete and the like.

5,954. April 20, 1915.—Oscar Bauer, 35 Bay, 32nd Street, Brooklyn, Kings, New York; U.S.A. Stone-working machines.

Any of the above specifications may be obtained from J. D. Roots & Co.

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SANITARY WORK AT THE FRONT WITH THE EXPEDITIONARY FORCE.*

By Lieutenant BERNARD R. HEBBLETHWAITE, A.R.I.B.A., 2nd London Sanitary Company.

SANITATION at the Front is a big subject. This paper will be confined to sanitation in the trenches and in villages just behind the trenches. At the Front there are no camps as we have them in England, nor at the bases, where a large camping ground would be too good a target for the enemy. Old barns, farms, and any sort of shelter are used as billets, and they form a considerable, though far from absolute, protection against shrapnel and high-explosive shells, and, of course, rifle fire. These are in every way more desirable than camps that have been selected possibly for their excellent position, their good drainage, their good water supply, or other conditions favourable to health. Everything in the presence of the enemy is subservient to tactical considerations. The principles of sanitation, of course, always remain the same: sanitation means the preservation of health or prevention of disease, and as applied to the Army we might include the promotion of comfort for the troops.

In any war, disease is one of the deadliest enemies, if not the deadliest. Our authorities are well aware of it, and are doing everything in their power to combat this foe.

That they have succeeded—at any rate in the chief theatre of the war—is not open to doubt, and the Sanitary Sections can rightly take to themselves considerable measure of credit for the complete absence of any epidemic in Flanders. It proves, at least, that the sanitary work there has been carefully attended to.

In no previous war has the sanitary organisation been quite as we have it in this campaign—that is, with a Sanitary Section attached to each Division as a separate unit.

Each Commanding Officer of any unit is responsible for the good sanitary condition of the locality which he occupies, and the Sanitary Officer is responsible for the sanitary condition of the whole area occupied by the particular Division to which he is attached. Men of the Sanitary Sections do not exist to do all the sanitary work necessary to the whole of the Division, but they exist more for superintending, directing, and advising, and do only that work which for some cause the units themselves are unable to perform. Men from every unit are set apart for sanitary work, quite irrespective of the Sanitary Sections.

A Sanitary Section consists of twenty men, five N.C.O.s, and one officer, together with two or three A.S.C. men. It is a separate unit attached to divisional Headquarters, and moves wherever the Headquarters move.

The Sanitary Officer, who is directly responsible to the A.D.M.S. of the Division, is mounted to enable him to make tours of inspection, as naturally a Division occupies a considerable area. A motor lorry is included in the equipment, and is a useful asset in transporting appliances and buildings of sanitary materials.

As previously stated, one Sanitary Section is attached to each Division. A Division consists of probably 20,000 men, though this varies considerably now. It is, however, a small army complete with its infantry, cavalry, transport, engineers, artillery, ambulances, Army Veterinary Corps, and Sanitary Section.

Now, there are several broad headings under which we can class the work.

1. What is perhaps the most important and difficult to deal with, is the disposal of excreta and urine. Under this heading is included the erection and making of all types of latrines, and the emptying of cesspools with tank cart and pump, and the burning of excreta.

2. Refuse, and its disposal by burial or burning.

3. Disinfection—disinfection of houses, dug-outs, or other places where an infectious disease has occurred, disinfection of clothing, and under the heading of disinfection we can include the killing and prevention of the breeding of flies.

4. Purification of water or water duties.

5. Getting rid of stagnant or filthy water from ditches or elsewhere.

6. Running of bathing establishments.

7. Burial or disinfection of carcases.

8. Erection of ablution trenches and grease traps. And we can conclude with the general item,

9. The putting in a clean and sanitary state of every place in the divisional area.

These headings embrace most of the sanitary work, but a few more items can be added to the work of the Sanitary Sections, such as:

(*a*) The general daily inspection of all billets in the divisional area.

(*b*) Advising on all sanitary matters.

(*c*) Disinfection of certain stores.

Perhaps some may consider that laundry work should come under the heading of Sanitation, and it certainly can: but these establishments do not come under the supervision of a Sanitary Section, nor have they anything to do with the Sanitary Squad set apart for sanitary duties. Laundry work is run on different lines in different Divisions.

Excreta and urine disposal:

To commence with the trenches. These are of two kinds—the ordinary trench and earthworks. The latter are not, strictly speaking, trenches; they are formed by a wall of earth or bags filled with earth, and the bags are then built up just as if they were bricks.

For latrines, in the ordinary trenches it is the usual practice to dig a small tee-shaped trench at right angles to the main trench, and at either end of the cross-piece of the "tee" to dig deep holes, and over the holes to place a wooden cover of three boards, the centre board being hinged or loose, like a trap-door. When it is to be used, the centre board is raised, and before leaving it is replaced in position.

No earth is used to cover the excreta, a certain amount of disinfectant being thrown in each day, either chloride of lime or a 5-per-cent. solution of creosol, or both, and the cover serves to exclude flies. In this way these holes or pits last several weeks. When they are full they are covered over with earth and another tee is dug, either in continuation of the last or a new one altogether.

Biscuit tins are largely used in the trenches for urine, and under cover of darkness they are emptied into a soakage pit.

Where earthworks exist instead of the ordinary trenches, it is sometimes possible to have the ordinary small trench latrines—that is to say, small oblong trenches 3 ft. long, 1 ft. wide, and 2 ft. deep—or the deep holes and covers can be used. But where earthworks exist, it is not infrequently on account of the waterlogged condition of the ground, found impossible to dig even shallow trench latrines. It is then imperative to use some sort of receptacle, either the ordinary Army latrine bucket or biscuit tins, which are taken away at night and the contents emptied in some of the ground behind, a considerable distance away, and the excreta are then covered over with earth and a sprinkling of chloride of lime.

We can now turn to the excreta disposal in the villages and places behind the trenches.

As regards the position of the sanitary area, either in camp or elsewhere, there are certain points to be remembered—latrines should be placed to leeward of the camp and in such a position that there will be no fouling of the water supply, as far away as practicable from the sleeping accommodation—not more than 100 yards—and as far as possible removed from kitchens.

The ordinary small shallow trench latrine lasting only

* Abstract of a Paper read before the Institute of Sanitary Engineers at Caxton Hall, Westminster, Major A. J. Martin, O.C. 2/2nd London Sanitary Company (Past President), in the chair.

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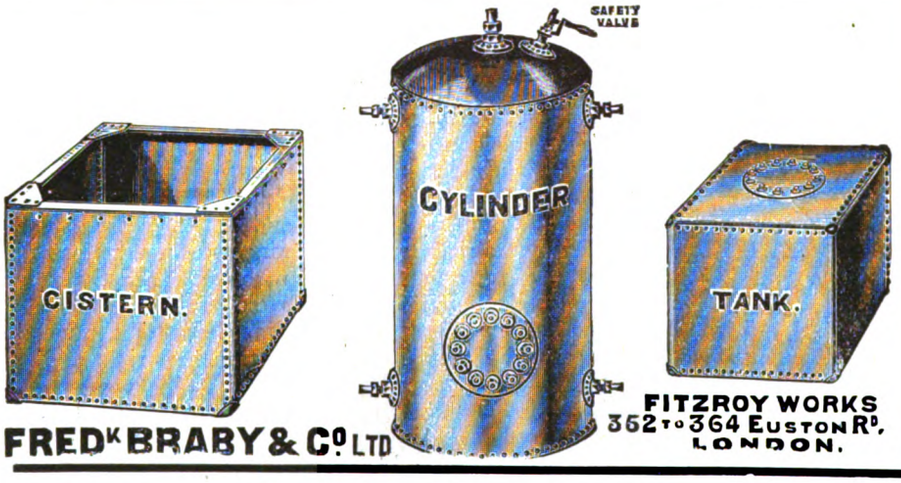
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one day is the most common, and is preferred to any other by practically all the chief Army sanitarians, and if they are used properly they are perhaps the best.

The required number varies from five latrines to every 100 men up to 500. When the number of men exceed 500, then 3 per cent. is found sufficient, and for a battalion it is the usual practice to provide 25 latrines.

However careful one may be in the laying out of these shallow trench latrines, a large area is soon bound to become fouled if men are to be billeted in the same place for any length of time. Consequently, it frequently happens that some other expedient is necessary, and some form of deep trench can be resorted to.

These trenches can be dug, say, 10 ft. long by 16 in. wide, and any depth. It is a common practice to dig one of these deep trenches and simply provide a pole to sit on. In a short time the sides become very foul; it is impossible to cover them with earth, and the flies have free access to them.

Deep trenches should only be dug when some sort of cover can be provided to exclude flies. With a proper cover no earth need be used at all; only some deodorant and disinfectant thrown in each day. In this way the trench will last much longer, and consequently greatly economise space. There are several forms of covers.

When an encampment or a position is taken over more or less permanently by a Division it is advisable as far as possible to construct roofs and enclosures to all latrines, more especially in the winter, not only because it is unpleasant to be seated in the rain, but the latrine buckets get filled with water, and this is a disadvantage when the contents are burnt. Consequently it falls upon the Sanitary Section to erect proper wooden structures covered with weather-boarding, and possibly with the roof covered with tarred felt or with corrugated iron.

The whole of the outside should then be coated with some preservative, such as tar. The floors should be constructed of concrete, with proper channel and soakage pit for the waste wafer after swilling down.

The whole of the inside should be whitewashed. The designer of the structure should aim at thorough ventilation and proper protection against the weather, and the construction should be such as to take a minimum amount of trouble to keep clean. It is essential that such places be kept scrupulously clean.

It is a good thing for a billet which is to be occupied more or less permanently to have a proper ablution bench upon which the washing-bowls are placed, and a channel formed at the back conducting the water through a down pipe, and, after passing through a grease trap, the liquid is finally conducted to a soakage pit, and thence into a ditch or some waterway.

The carpenter can also employ his leisure time in making signboards. All sorts of boards are required to mark old sanitary areas, filled-in refuse pits, and latrines, or to direct the incoming unit to the sanitary area, or notices in reference to water, whether fit to drink or otherwise.

To continue under the next heading—Refuse Disposal.

In the trenches, bags or sacks are fixed up at intervals and all refuse collected in them. The contents of the sacks are buried under cover of darkness. No burning can be done within several miles of the trenches for obvious reasons; consequently in that part all refuse has to be buried. A deep pit is dug which may last a week or so, and all the refuse tipped into it.

Great care and supervision should be exercised over this to see that an ample supply of disinfectant—usually a 5-per-cent. solution of creosol—be sprayed over the refuse several times a day to prevent the breeding of flies. This is very important in keeping down the fly nuisance.

Further behind the trenches all refuse should be burnt in incinerators. It is essential that all billets should be immediately provided with an incinerator. These need not be elaborate structures so long as they are effective. They can be built of turf, biscuit tins filled with earth, bricks, or corrugated iron.

An excellent ordinary small incinerator can be made out of corrugated iron. It is made out of a sheet about 10 ft. long and 1 yd. wide, bent into a circle and fixed either by riveting or wiring, and then placed over two cross trenches dug in the ground to provide the necessary ventilation or draught. The trenches should be about 9 in. deep and 9 in. wide. Brick incinerators are built either circular or square on plan of 9-in. brickwork. A good size is 4 ft. 6 in. square, or of 4 ft. 6 in. diameter if circular, with free air inlet holes at the base about 1 ft. wide and 1 ft. 3 in. high; these also serve for raking out the ashes. Iron bars form a grid over which the refuse rests, and should be built in about 1 ft. 3 in. from the ground.

Fortunately, very little difficulty is experienced in obtaining all the bricks and ironwork necessary: the German artillery is quite equal to that little task.

To revert now to disinfection. Disinfection is carried out in a variety of ways—by the Thresh disinfector, the portable horse-drawn type, and disinfecting by a current of steam.

There is also another type of steam disinfector—the double Thresh and the Washington Lyon, both of which are similar and are mounted on a Foden steam lorry. In appearance it is like two ordinary Thresh machines fixed crossways on to a steam-driven lorry. The clothes are put in at one side and taken out at the other. It is worked with a pressure of steam, and this steam is generated from the boiler of the propelling engine. One of these steam lorries is now attached to each Division.

Colonel Horrocks has designed an excellent steam disinfecting box, which is used largely where there is only a small amount of disinfecting to be done. It is very effective and simple, and forms part of the equipment of each Sanitary Section.

The disinfection is carried out by means of passing a current of steam from a small boiler through the disinfecting box containing the clothes, and allowing it to pass through for half-an-hour.

Each divisional Sanitary Section has also in its equipment a Clayton sulphur-dioxide generating machine. It is portable, on wheels, and is used chiefly in connection with the hospitals for the clothes of patients, and especially for any leather goods and other things that would be ruined by the excessive heat and dampness to which everything is subjected in steam disinfection.

There is also the disinfection of houses, rooms, and dug-outs. Every case of infectious disease is notified to the Sanitary Officer immediately it becomes known, not only amongst the soldiers but also amongst civilians. Investigation should then be made on exactly similar lines to what is done at home.

The disinfection can be done by means of the formalin lamp, burning formalin tabloids, exactly as at home, the room, of course, being first made airtight. As an alternative, the room can be sprayed with formalin solution, after which it is better to close up the room for several hours. There is also general disinfection with chloride of lime, creosol, paraffin oil, borax, heavy green oil, and kerosene oil, these substances, together with rock sulphur and formalin, being the only disinfectants supplied to the Army at the Front. They do, however, meet practically all needs.

Chloride of lime or 5-per-cent. solution of creosol are used for the disinfection of latrines, urinals, refuse, manure, &c. Paraffin oil is used for spraying stagnant water and manure. A solution of borax—about ½ lb. to a gallon of water—has been used a great deal for spraying manure, and it is supposed to cause the eggs of flies to become unfertile. Whether this is really successful is open to doubt. Kerosene oil is good for spraying stagnant water. In tropical countries this and other heavy oils are invaluable for keeping down the mosquitoes.

When one considers that the list of diseases caused or spread by flies includes typhoid, cholera, tuberculosis, infantile diarrhœa, ophthalmia, infantile paralysis, anthrax, plague, and dysentery, it will readily be seen

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that it is imperative so far as possible to mitigate this danger. It is especially so with an army on active service, where the conditions of living tend to foster the breeding of flies, and where the danger of contaminating the food is also proportionately greater. Everything should be done not only to kill the adult flies, but, more important still, to prevent their eggs being hatched. They breed in all decaying vegetable and animal matter, and especially in manure.

An important branch of the work of a Sanitary Section is naturally connected with water. It is the first duty of a sanitary officer on entering a new area to have all the water supplies tested as to their purity, and to have their sources properly guarded against pollution.

The universal method for the sterilisation of water used on active service is the chlorine process, which is carried out by the special apparatus designed by Colonel Horrocks. The result of the test by Colonel Horrocks' apparatus gives the requisite amount of chlorine necessary to be added to the water contained in one water-cart —or 110 gallons—to render it safe for drinking purposes. Where the water to be used is turbid or muddy, it is passed through the clarifier which is attached to the water-cart, and the chlorine should be added afterwards.

The carrying out of the test has been reduced to simplicity itself. Notices are afterwards sent out to each medical officer of every unit stating the amount of chlorine or chloride of lime necessary to be added to each water-cart.

Bathing establishments are an important branch of the work of any Sanitary Section, and a bathing place is the most popular house in the divisional area.

The men were continually agitating for baths; they grumbled considerably if they could not get them, and judging by the hilarity and their words of appreciation whilst they were actually in the baths, one could judge fairly well how much the baths were enjoyed.

The canals are the great places for bathing in France, and it is no uncommon sight to see hundreds of soldiers in the water. It is also a common sight to see notices fixed up, stating that this or that particular short stretch of water belongs to a certain unit, and elaborate diving-boards fixed to the sides, or rafts tied to the banks, and even goal posts and nets for water polo.

Sanitary Sections are only interested in the giving of hot baths. These are of two varieties: (*a*) slipper baths and (*b*) shower baths. Turkish baths may have been enjoyed by our men at the Dardanelles, but such luxuries are not vouchsafed in France. Slipper baths in use are mostly in towns where perhaps in some public building, such as a school, there may be a considerable number installed, and these are taken over by the military authorities. Shower baths demand a greater attention by the sanitary section. Three apparatus are supplied to each Division. They are made in France, and are very ingenious. They can be fitted up very quickly in farm outbuildings. It has been found that with a single apparatus 700 men can be given a hot bath per day, and only at the expense of a ton of coal per month.

In connection with these baths arrangements are made to supply clean or new underclothing to the men. All the dirty clothing is probably infected with lice, and it is essential that no clean clothing should come in contact with verminous clothing.

This involves a special system whereby the men undress in one room, pass into another for their bath, and then into a third room to dry and dress.

A laundry should be worked in connection with the baths, and if a disinfector is also worked in conjunction the arrangement would be almost ideal.

THE Legislative Council of New South Wales are considering a Bill for the construction of a bridge across the magnificent harbour of Port Jackson so as to connect Sydney with North Sydney. The latter has a railway service which links it up with a series of thriving northern suburbs. The cost of the scheme is expected to exceed £3,000,000.

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THE annual report, accounts, and balance-sheet of this company presented to the shareholders at the fifty-fourth annual meeting show a continued and steady advance in the prosperity of all departments, even despite the war, of that dealing with marine risks. The auditors note that the sums at which the securities stand in the balance-sheet are below their aggregate market value. After deducting all charges of every kind, including income tax, and after providing the usual 40 per cent. reserve for the increased liabilities, the net results in each of the accounts are as follows:—

	Premiums	Net Profit
	£	£
Fire	1,716,648	166,091
Accident	9.8,982	64,199
Marine	359,451	44,450
Total	2,985,081	275 240

Interest on investments has yielded £114,532. After writing off the sum of £85,000 from the Company's investments, transferring £10,000 to the staff pension fund, and providing for the dividend for the year of 29*s*. per share, less income tax, there is a net addition to the funds of the Company of £241,886. The total premiums amount to £2,985,081, and the reserve funds to £3,708,229.

VARIETIES.

THE Giffnock Collieries, Ltd., are erecting twelve cottages adjoining their pits for their workpeople.

THE Earl of Rosebery was elected the new President of the London Topographical Society in succession to the Earl of Plymouth at the recent annual meeting at Burlington House, W.

THE Royal Free Hospital, Gray's Inn Road, London, W.C., has been presented by an anonymous donor with nearly an acre of ground adjoining the hospital with a view to future extensions of the building.

THE Goole Urban District Council have appointed a committee to obtain expert advice and consider schemes for augmenting the water supply. The level at their Pollington station has declined from 42 feet in 1914 to 33 feet last month.

THE Edinburgh Architectural Association held their annual business meeting last week, when reports from the various committees were received and adopted. No change was made in the office-bearers or members of committees for next session, Mr. J. F. Maclennan, A.R.I.B.A., being re-elected President.

NEW Corporation baths have been opened in Muskham Street, Nottingham, where they occupy the site of the old tram stables. These "Portland baths" comprise a swimming-pond, 100 feet long and 30 feet wide, sixteen private baths for gentlemen and seven for ladies, with the usual foot-baths, ticket office, &c. The design was prepared by Mr. A. Dale, Licentiate R.I.B.A., city architect.

THE Council of the Royal Institute of Architects of Ireland held an ordinary meeting at 31 Frederick Street, Dublin, last week, Mr. A. Caulfeild Orpen, B.A., R.H.A., President, in the chair. A resolution was passed placing on record the Institute's sense of the great loss the profession of architecture has sustained in the death of Robert Cochrane, I.S.O., LL.D., F.S.A., &c., who for thirty-eight years loyally supported the Institute.

THE *Gaceta de Madrid* of March 31 publishes the text of a royal decree granting extraordinary credits in favour of certain Spanish Government Departments as follows:—Ministry of War.—Barrack construction and improvement works, &c., 500,000 pesetas. Home Office.—Works in the National Institute of Hygiene of Alfonso XIII., 300,000 pesetas; works in the Cancer Institute, 50,000 pesetas; works in the Mahon Hospital, 150,000 pesetas. Ministry of Public Instruction and Fine Arts.—Advances to municipalities for the construction of new schools, 600,000 pesetas; extension and improvement works in buildings under the control of the Ministry, 400,000 pesetas. Ministry of Fomento.—Road conservation works, 3,000,000 pesetas; new road construction, 1,000,000 pesetas; road repair works, 1,500,000 pesetas; construction of agricultural engineering school, 500,000 pesetas. 25 pesetas = about £1.

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THE

Architect and Contract Reporter.

FRIDAY, APRIL 28, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITION OPEN.

DUBLIN.—June 15.—The Senate of the National University of Ireland invites designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2s. deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

CHELMSFORD.—May 3.—For painting, &c., the following police stations: Braintree, Clacton-on-Sea, Ongar, Southminster, Thorpe, Tilbury, and Upminster. Mr. G. Topham Forrest, F.G.S., 79 Duke Street, Chelmsford.

CWM (MON.).—May 1.—For erection of caretaker's house at Duffryn Schools, Cwm, for the Ebbw Vale Education Committee. Deposit £1. Mr. T. Hughes, secretary, Council Offices, Ebbw Vale.

GRASSINGTON.—May 2.—For plumbers' work required in erection of sanatorium buildings at Grassington, for the Bradford Corporation. The City Architect, Town Hall, Bradford.

IRELAND.—May 1.—For converting a portion of their butter and egg market into a milk depot, for the Newry Urban District Council. The Surveyor's Office, Town Hall, Newry.

KEIGHLEY.—May 6.—For construction of a pumping engine-house at the Fleece Mill Company's works, for the Keighley Corporation. Mr. S Terry, town clerk, Town Hall, Keighley.

LITTLE BROUGHTON.—May 5. —For the renovating of the Primitive Methodist church, Little Broughton, Cumberland. Mr. J. Byers, Great Broughton, Cumberland.

PONTEFRACT.—May 3.—For the work required in alterations and additions at the Congregational Sunday School, Back Northgate, for the Education Committee. Mr. J. E. Pickard, borough surveyor, Municipal Offices, Pontefract.

SALFORD.—May 1.—For erection of a sub-station building in Blackfriars Road, for the Electricity Department. The Borough Electrical Engineer, Electricity Works, Frederick Road, Salford.

SCOTLAND.—May 5.—For execution of joiner, plumber, plaster, patent glazing, and slater work required in erection of store at Dudhope Crescent Road, Dundee, for the Corporation Electricity Department. Mr. H. Richardson, M.Inst.E.E., Electricity Department, Dundee.

WALES.—April 29.—For repairs to Mount Church, near Cardigan, for the Rev. J. Jones. Mr. G. T. Bassett, A.R.I.B.A., architect and surveyor, 13 North Parade, Aberystwyth.

WATERHOUSES (DURHAM).—May 4.—For the construction of boundary walls, iron railing, drainage, and road-making in connection with the Waterhouses Cemetery, for the Brandon and Byshottles Urban District Council. Mr. G. G. Donkin, surveyor, Langley Moor.

WEST HARTLEPOOL.—April 28.—For erection of a brick chimney shaft in connection with the electric power station, for the Corporation. Mr. N. F. Dennis, M.I.C.E., borough engineer, Municipal Buildings, West Hartlepool.

WIGAN.—May 1.—For an extension of the Market Hall. Specification, bills of quantities, and form of tender on application to Mr. A. T. Gooseman, Borough Engineer, King Street, Wigan.

TENDERS.

BEVERLEY.

For erection of foreman's house and two cottages at the High Eske Farm, near Beverley, for Mr. Slingsby Thorpe, Underwood Hall, York. Mr. R. H. WHITEING, architect, 3 Ladygate, Beverley. Quantities by Mr. JOHN WATSON, Bowalley Lane, Hull.

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JAMES CONSTABLE, Beverley (*accepted*)	932 14 5

GUILDFORD.

For erection of a retaining wall for the support of the highway in Quarry Street, Guildford, the construction to be either in mass concrete or reinforced concrete on the Kahn system, for the Town Council.

Reinforced Concrete.

FRANKS HARRIS BROS., Station Approach, Guildford (*accepted*)	£674 4 9

MAJOR W. H. ALLEN, R.G.A., of Evenley Hall, Brackley, Northants, has joined the Board of the Fairby Construction Co., Ltd.

THE Caledonian Railway Company have authorised the immediate reconstruction of Slateford Station to cope with the business at the new Edinburgh Cattle Market. The contract for the new buildings has been let to Mr. John Shirlaw, Carluke, while the heightening and lengthening of the platforms is being carried out by the company's men. The new overbridge will be provided by Messrs. P. & W. Maclellan, Ltd., Glasgow.

AT the annual meeting of the Paignton Urban District Council it was reported that certain architects in the town had approached the surveyor to ascertain if the Council were likely to require their services in a professional capacity, in which case they would be prepared to undertake any work which the Council might require to be done. It was agreed to inform the architects in question that the Council were not at the present time carrying out any work which would necessitate the employment of extra professional assistance, but that if circumstances demanded they would be glad to avail themselves of the offer.

THE Grimsby Corporation Electric Lighting Committee have decided not to accept any new consumers of current for lighting purposes. The plant is already overloaded, and the power station cannot be extended at present. In the course of a report, the acting-engineer, Mr. A. S. Channon, said the committee could only maintain supply next winter by continuing the present lighting restrictions, whether or not the need for them under the Defence of the Realm Act had ceased. A scheme of extensions should be prepared, so that orders could be placed immediately on the close of the war. The committee adopted the Engineer's report, and agreed, in the event of the war being over by next winter, to continue the existing restrictions as to private and public lighting.

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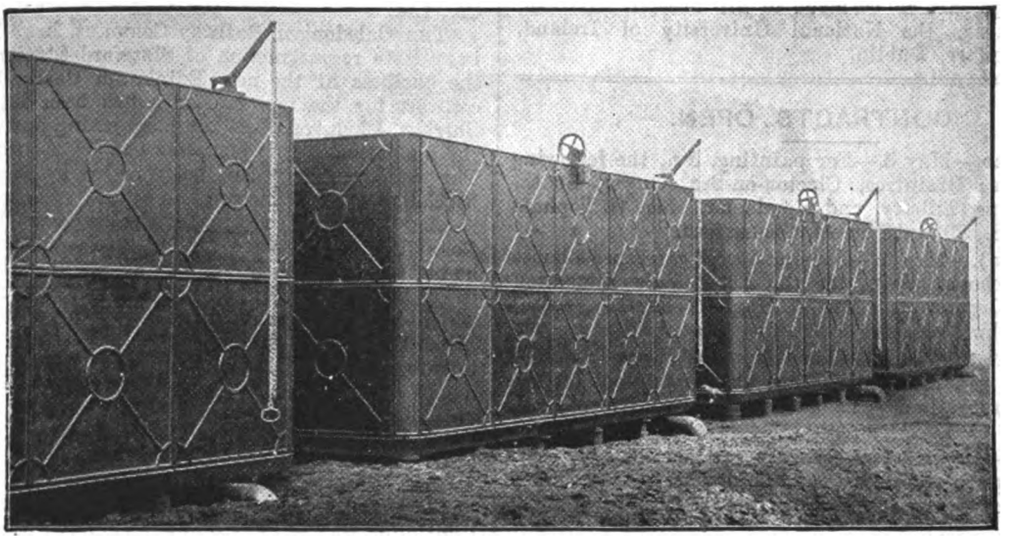
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TOWN PLANNING. 1914-15.

THE Local Government Board has issued Part II. of their Forty-fourth Annual Report which relates to matters incidental to the administration of the Housing of the Working Classes Acts, 1890 to 1909, and of Part II. of the Housing, Town Planning, &c., Act, 1909, which deals with town planning.

The report deals for the most part of the year ended on March 31, 1915, and naturally divides itself into two principal sections, namely, housing of the working classes and town planning. The former we synopsised in our issue of March 31.

SECTION 2.—TOWN PLANNING.

General observations.—In their last report the Local Government Board gave some particulars of the satisfactory progress made by the movement in favour of the ideas involved in what is commonly referred to as town planning. They alluded not only to the action which was being taken by local authorities for the preparation of town-planning schemes under the provisions of the Act of 1909, or to the estates which had been laid out by landowners or syndicates on so-called garden-city lines, but also to the fact that landowners generally were realising more fully that their responsibilities were not entirely limited to their own estates, while local authorities and landowners alike were becoming more alive to the advantages of providing for through communication when land was being laid out.

Although the effect of the war on town planning has not been so greatly marked during the period under review as in regard to housing, the movement seems to the Local Board to be likely to receive a set-back during the current year. Many local authorities who had been actively engaged in preparing town-planning schemes, or considering proposals for schemes, have been compelled to curtail their consideration of the matter owing to seriously depleted staffs.

The schemes which have come before the Board have been chiefly concerned with the laying-out of the main routes of communication through and from the areas dealt with; with the provision of open spaces; with the limitation of the number of houses which may be erected upon any particular area; with the careful setting back of the building lines so as not only to secure abundant air space but also to enable road widenings to take place hereafter at the minimum cost should unforeseen circumstances render these necessary; and with the restriction of factories and similar buildings to particular areas and the setting aside of particular sites for public purposes. In six of the schemes made by local authorities (viz., three Birmingham schemes, a Rochdale scheme, a North Bromsgrove scheme, and a Chesterfield scheme) the authorities did not attempt to regulate or control by the schemes to any great extent the architectural features of the buildings to be erected, but in the scheme made by the urban district council of Ruislip-Northwood some provisions are included in regard to architectural matters.

The Board again impress upon local authorities the importance of making their schemes as simple as possible and to avoid complex regulations in regard to matters of taste and detail and other things which it is not essential to settle, at all events in the first instance. For it is unlikely that any scheme can be entirely complete in itself, and it will probably be best to recognise this and to trust to subsequent schemes for filling in details when the necessity for them becomes apparent. The conferences in connection with the preparation of schemes frequently revealed that on the general questions as to road arteries, open spaces, restriction of number of houses on area and such matters there is a moderate amount of agreement between owners and other persons interested and the local authority, but when an attempt is made to legislate generally upon all the details of development, differences arise which often require considerable time for settlement.

Preparation of schemes.—Before a local authority can actually prepare a scheme with reference to any land within or in the neighbourhood of their area they must under section 54 (2) of the Act of 1909 satisfy the Local Board that there is a *primâ facie* case for making a scheme and receive their authorisation to prepare one. A like authorisation is required to enable a local authority to exercise the power conferred on them by adopting with or without modification a scheme proposed by all or any of the owners of any land with respect to which the local authority might themselves have been authorised to prepare a scheme.

A statement of the schemes authorised to be prepared or adopted by local authorities since the passing of the Act of 1909, together with the acreage of the areas dealt with, is contained in the following table:—

Year Ended March 31	Urban Authorities: Number of Schemes	Urban Authorities: Number of Local Authorities	Urban Authorities: Acreage of Areas Dealt With	Rural Authorities: Number of Schemes	Rural Authorities: Number of Local Authorities	Rural Authorities: Acreage of Areas Dealt With
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1911	3	2	9,668	—	—	—
1912	11	9	4,174	—	—	—
1913	17	16	27,563	2	1	9,173
1914	17	16	23,060	6	4	16,731
1915	42	34	60,211	7	6	16,991
Totals ...	90	66(net)	124,676	15	8(net)	42,895

It will be seen that up to the end of March, 1915, authority had been given for the preparation or adoption of 105 schemes by 74 local authorities, embracing a total area of more than 167,000 acres.

Schemes made by local authorities.—In seven of these cases schemes were subsequently submitted for approval. Of these seven schemes three were prepared by the Corporation of Birmingham, and the other four by the Corporations of Rochdale and Chesterfield and the urban district councils of Ruislip-Northwood and North Bromsgrove.

Two of the Birmingham schemes, and also the Rochdale (Marland) and the Ruislip-Northwood town-planning schemes, have passed through all their stages and have been finally approved.

Authority given for preparation of schemes during year 1914-15.—As already mentioned, section 54 (2) of the Act of 1909 provides that the Local Government Board (1) may authorise a local authority to prepare a town-planning scheme with reference to any land within or near the neighbourhood of their area if the authority satisfy the Board that there is a *primâ facie* case for making such a scheme, or (2) may authorise a local authority to adopt with or without any modifications any such scheme proposed by all or any of the owners of any land with respect to which the local authority might themselves have been authorised to prepare a scheme. During the year ended March 31, 1915, the period to which this report relates, authority was given for the preparation of 49 schemes by the following forty local authorities in respect of areas containing more than 77,000 acres of land, namely:—

Corporations (19) (27 schemes): Barrow-in-Furness, Birkenhead, Great Yarmouth, Huddersfield (3 areas), Kingston-upon-Hull, Leeds (2 areas), Lincoln, Manchester (4 areas), Neath, Nelson, Newcastle-upon-Tyne, Newport (Mon.) (2 areas), Rochdale, Southend-on-Sea, Tynemouth, Wallasey (2 areas), Wallsend, Wrexham, York.

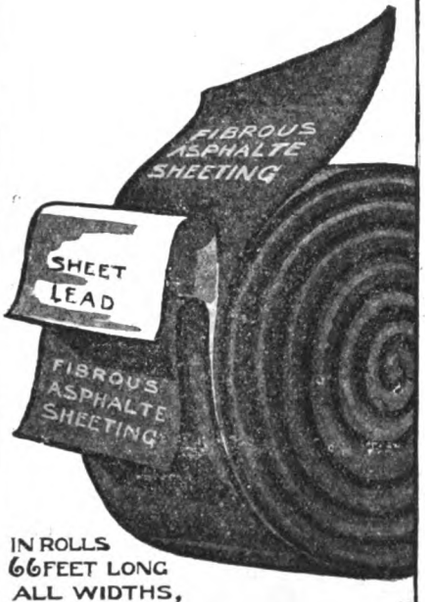
Urban district councils (15) (15 schemes): Barnet, Beckenham, Edmonton, Esher and the Dittons, Grays Thurrock, Harrow-on-the-Hill, Hendon, Heston and Isleworth, Merton and Morden, Neston and Parkgate, Oldbury, Otley, Ruislip-Northwood, Sidmouth, Surbiton.

Rural district councils (6) (7 schemes): Doncaster, Halesowen, Hendon, Honiton, Rotherham, (2 areas), Wrexham.

In several of the cases the Board found it necessary to modify the areas of the proposed schemes by the exclusion of certain lands which for various reasons they considered should not be included in those schemes. In nearly every case the land excluded has been land built

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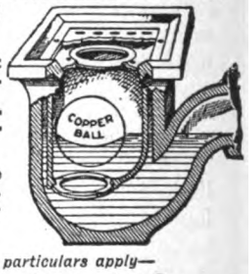
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on or land not likely to be used for building purposes in regard to which no sufficient reasons were assigned for inclusion under section 54 (3) of the Act of 1909. The Board state it is their desire to take as broad a view as possible in regard to land which may be included in a scheme, but it does not seem to be generally realised that it is necessary that a case should be made out under Section 54 (3) for including land built on or land not likely to be used for building purposes.

In addition to the cases just mentioned the Board have had under consideration at March 31, 1915, thirteen applications by twelve local authorities for authority to prepare schemes in respect of areas comprising about 25,000 acres of land. In some of these cases authority to prepare schemes has been given since March 31, 1915.

Before an application can be made for authority to prepare a scheme or to adopt a scheme prepared by owners certain procedure under the Town-Planning Procedure Regulations must be taken, including the giving of notices to persons interested. In addition to the cases above mentioned preliminary notices had been given under the Regulations by thirty-two local authorities with a view to application being made to the Local Government Board for authority to prepare schemes.

In a large number of other cases the consideration of the matter by the local authority seems to have reached a stage practically equivalent to a decision to proceed with a scheme, and in numerous other cases the question of preparing a scheme has been under consideration.

The following table shows approximately the position at July 31, 1915, of the various proposals by local authorities in regard to the preparation of town-planning schemes:—

Stage	Number of Schemes	Number of Local Authorities	Acreage of Areas Dealt With
Schemes finally approved	4	3	9,711
Other schemes prepared and submitted for approval	4	4	4,201
Other schemes authorised to be prepared or adopted	105	72	165,445
Applications for authority to prepare schemes under consideration	14	13	37,649
Total	127	83(net)	217,006
Additional cases in which the preliminary notices have been given with a view to applications for authority to prepare schemes ...			26
Approximate number of other cases in which local authorities have had the matter under consideration			107
Net number of local authorities included under all headings			210

Town-planning schemes in the Greater London area.—Included amongst the local authorities who have taken definite action with a view to the making of town-planning schemes are many in the area of Greater London. No proposal for a scheme has reached the Local Government Board from the London County Council, who are the local authority in London for the purposes of Part II. of the Act of 1909, but in addition to the Ruislip-Northwood urban district council the following local authorities have obtained authority to prepare schemes for parts of their areas, namely:—Richmond Town Council, Barnet, Beckenham, Carshalton, Edmonton, Esher and the Dittons, Finchley, Ham, Hanwell, Harrow-on-the-Hill, Hendon, Heston and Isleworth, Merton and Morden, Ruislip-Northwood (second area), Surbiton, Twickenham, and Walthamstow Urban District Councils and the Hendon Rural District Council.

At March 31, 1915, applications for authority to prepare schemes from the following local authorities were under consideration:—Croydon Town Council and Beckenham Urban District Council (additional area), and the requisite authority has since been given in both these cases.

In addition to these local authorities the necessary preliminary notices had been issued at March 31 last by the following local authorities with a view to obtaining authority to prepare schemes, and in one case (Southgate) application has since been made for such authority:—Acton, Barnes, Chiswick, Finchley (additional area), Hayes, Hendon (additional area), Southgate, Wembley, Willesden and Wood Green Urban District Councils. The question of preparing schemes has been receiving consideration by a number of other authorities in the Greater London area.

SMOKY SHEFFIELD.

THE first statement of the results of the chemical investigation of rain-water in Sheffield is contained in a report prepared by Professor W. Palmer Wynne, of the University, and issued as an appendix to the annual report of the Medical Officer of Health. Experiments have been carried out with a view to determining the pollution of the atmosphere by means of an analysis of rain-water. These experiments were conducted in twelve English and five Scottish towns. In Sheffield gauges for collecting the rain were fixed as nearly as possible in direction respectively north, south, east, and west of the Town Hall. The sites chosen were: Attercliffe Burial Ground, 148 feet above sea level; Hillsborough Park, 250 feet; Meersbrook Park, 362 feet; and Weston Park, 425 feet. The analytical work was carried out under the supervision of Professor Wynne, and the period covered by the report is July 1914 to June 1915.

The investigations have not proved conclusive. Professor Wynne gives many tables of figures as to the impurities collected from the rain gauges, but he points out that they furnish no clue to the amount of impurity in the atmosphere except when rain is falling.

"The chemical investigation of atmospheric pollution is thus seen to afford less information about the total amount of impurity found in the air of towns than perhaps may have been anticipated by those who initiated the inquiry in different localities in England and Scotland. Such a method could give comparative results of scientific value only if rain fell at a uniform rate, and either all day or at the same period of each day—conditions not attainable in nature. Necessarily, Sheffield's atmosphere is at its worst on a calm day; there were many days last winter when a smoke fog was much in evidence, necessitating the closing of all windows in our houses to keep out the smuts, but as no rain fell on those days the pollution so evident to our senses found no record in the results of this investigation. Nor is this a matter of opinion only; it was corroborated during October and November 1914 by the records obtained with Owen's air filter—an apparatus in which a certain volume of air is drawn at a given rate through porous paper, and the discolouration of the paper read against a standard scale—records which were worse on calm rainless days than on those which were rainy. Better results would no doubt be obtained if air were drawn through water continuously at a given rate, so as to ensure thorough and complete washing out of all impurity, but it is not unlikely that other methods exist or could be devised, which would furnish the desired information about atmospheric pollution more readily and at a less cost.

"Subject to these not unimportant limitations, a comparison of Sheffield's atmosphere with that of other towns is not without interest, as it suggests that Sheffield's evil reputation for smoke as contrasted with that of other towns may not be altogether deserved. According to the reports published in the *Lancet*, certain observation stations in other towns (Birmingham, London, Manchester, and Oldham) show a greater amount of pollution than does Attercliffe, which is Sheffield's worst.' To what extent this may be due to differences in the kind of coal burned does not appear; Leeds, which may burn a coal not very dissimilar from that used in Sheffield, has not participated in the present inquiry, and a comparison of the atmospheres of the two largest Yorkshire towns is thus precluded. Since the beginning of the year Manchester has had no fewer than ten observation stations, but at the time of writing the *Lancet* has published only the results furnished by them for the first four months; it is a matter for regret that Salford, on the west of the city, has not co-operated in the inquiry, as the record is thus necessarily incomplete.

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If the results recorded for the stations situated within three miles of the Manchester Town Hall for the period January to April 1915 be collated with those of Sheffield (all within two miles of the Town Hall) for the same four months, it will be seen—making allowances for differences in rainfall—that although Sheffield, according to these figures, is not exactly a health resort, it has an atmosphere less foul on the whole than that of its great neighbour to the west."

Commenting on certain evidence of diminishing atmospheric pollution in the Attercliffe area in April and May, which seems to conflict with probabilities, Professor Wynne remarks that far too little is known of atmospheric movements and of the effect of land contours on the accumulation or dispersal of smoke by air currents to permit of an exact interpretation of the chemical data as evidence of intensity of pollution. Sheffield derives many advantages from the hills among which it has grown, and not the least of them may be the relatively better atmosphere it enjoys, even in the valleys, than Manchester, which, while it probably does not produce more smoke per unit area, is built on a plain.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 5,660. April 15, 1915.—A. R. Banks, Churchfield, West Bromwich, ironmaster, and Albert Bye, 298 High Street, West Bromwich, architect and surveyor.—This invention relates to reinforcing members for concrete, of the kind

Fig. 1.

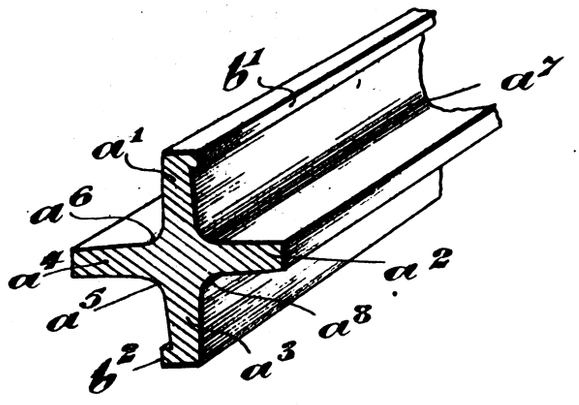
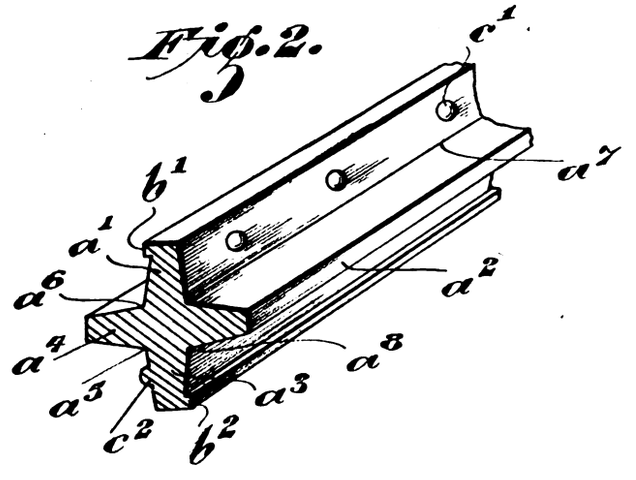


Fig. 2.



comprising a bar or member having a number of longitudinal webs forming in cross-section a substantially cross or star-shaped member. The invention comprises a reinforcing member for concrete having a number of longitudinal webs forming in cross-section a cross or X-shaped member, but in which one, two, or more of the webs is provided, or are each provided, at the outer edge of the web, with a lip or flange disposed on one side only of the web. Fig. 1 is a sectional view of a portion of the reinforcing bar. Fig. 2 is a similar section to that of fig. 1, but showing a modification. A bar is formed in rolled steel, having four projecting or radiating webs or flanges a^1, a^2, a^3, a^4, and four angles a^5, a^6, a^7, a^8, so as to provide a member which is cross or X-shape in section. The two oppositely projecting flanges a^1, a^3 of the member, preferably the upward and downward vertical flanges of the cross-shaped member, are respectively formed at their outer longitudinal edges, with a beaded over part or continuous lip b^1, b^2, comparatively narrow or small, said lips projecting out at right angles to the plane of the flanges in opposite directions; that is to say, for example, in a right-hand direction from the one or upper flange, and in a left-hand direction from the other or lower flange, such lip or beaded over parts providing resistance against twisting of the bar. Angular projecting lips may also be formed upon the other remaining flanges a^2, a^4 of the member, while projecting bosses c^1, c^2 may be, for example, respectively formed on the reverse faces of the flanges a^1, a^3 to those from which the lips b^1, b^2 project, thus obviating any tendency for the bars to slip longitudinally in cases where they may be used vertically for reinforcing concrete columns and the like. By the employment of a reinforcing member of this character a practically maximum surface area is provided, while the shape of the section gives a much greater power of adhesion, and considerably reduces the tendency to any sliding action between the concrete and the reinforcing metal. The shape also facilitates the concrete adhering closely to the bar or member without the necessity of ramming. The projecting lips or edges upon the flanges constitute an effective and secure key and prevent movement. March 29, 1916.

VARIETIES

THE house famine in the Coventry district, due to the influx of munition workers, is reflected in the annual report of the Foleshill Council, which states that plans for 750 houses were approved last year, a record for the locality.

AT a general assembly of Academicians and Associates held last week, David Young Cameron, painter; Maurice Greiffenhagen, painter; and Bertram Priestman, painter, were elected Associates of the Royal Academy.

THE Kingstown (Ireland) Urban Council at their last meeting adopted the report of the Construction Committee, which recommended that the Council apply to the Local Government Board for sanction of a loan amounting to £76,218 6*s*., for the erection of 271 houses for the working classes at rents varying from 6*s*. 6*d*. to 11*s*. 2*d*. a week.

THE Council of the Royal Institute of British Architects have passed the following resolution:—"That the payment by any member or licentiate of the R.I.B.A. of a fee or commission to any person in respect of his good offices in introducing work is unprofessional, and on all grounds to be avoided." This resolution is to be added to the professional conduct regulations.

MR. HERBERT P. HORNE, architect and writer on art, died recently at his Florence residence at the age of fifty-one. Two buildings erected from his designs are the Church of the Redeemer, Bayswater Road, and the new buildings in Brewhouse Court, Eton College. His most important literary work was the monumental life of Sandro Botticelli, the first volume of which appeared in 1908, and the second is still to come.

THE annual meeting of the Sheffield Master Plumbers' Association was held at the Builders' Exchange and was well attended. The following were the officers elected for the next twelve months:—President, Mr. W. A. Uttley; ex-president, Mr. F. G. Norton; vice-presidents, Messrs. H. A. Ward and E. Bond; secretary, Mr. J. Baxter Corrie; treasurer, Mr. E. Bond.

THE Ministry of Munitions recently instituted an inquiry as to how far labour at present engaged on public and private buildings could be diverted to immediate national purposes. The result has been that many men employed on large public contracts have been withdrawn, but a strong feeling of irritation has since arisen among builders' operatives because of the difficulties placed in their way to obtain work in the localities where they are said to be most urgently required. Representations have been made to the Ministry of Munitions on behalf of the Building Trades Federation, and it is hoped that work which has been practically suspended on a number of private buildings will be resumed at an early date.

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THE
Architect and Contract Reporter.
FRIDAY, MAY 5, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITION OPEN.

DUBLIN.—June 15.—The Senate of the National University of Ireland invites designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2*s.* deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

BOGNOR.—May 15.—For alterations to their premises in High Street (corner of York Road) for Messrs. Timothy White Co., Ltd. Apply at 1 The Arcade, Bognor.

KEIGHLEY.—May 6.—For construction of a pumping engine-house at the Fleece Mill Company's works, for the Keighley Corporation. Mr. S Terry, town clerk, Town Hall, Keighley.

OTLEY.—For the several works required in erection of new sheds, Otley Mills, for Messrs. Duncan Barraclough & Co. Mr. J. H. Wall, architect, 3 Manor Square, Otley.

ROCHESTER.—May 16.—For certain additions to the fire station, the Common, for the Corporation. Mr. W. Banks, A.M.I.C.E., city surveyor, Guildhall, Rochester.

ROMSEY.—May 6.—For building repairs and reconstruction, after fire, the Mottisfont Whiting, Putty and Colour Works. Mr. W. Comley Roles, Awbridge, near Romsey, Hampshire.

SCOTLAND.—May 5.—For execution of joiner, plumber, plaster, patent glazing, and slater work required in erection of store at Dudhope Crescent Road, Dundee, for the Corporation Electricity Department. Mr. H. Richardson, M.Inst.E.E., Electricity Department, Dundee.

WARRINGTON.—May 16.—For extension of buildings, for the Electricity and Tramways Committee. Deposit £1. Mr. S. P. Silcock, architect, 6 Egypt Street, Warrington.

WESTHOUGHTON.—May 10.—For erection of forty-one workmen's dwellings to be erected off Church Street and Lord Street, for the Westhoughton Urban District Council. The work will be let in three contracts—namely, (contract 1) a row of seven and also four pairs of type A cottages; (2) nine pairs type A cottages; (3) four pairs type B cottages. The Council may let either one or more contracts to an individual firm of contractors. Plans may be seen, and specifications of type A houses, and specification and bill of quantities for type B houses, together with forms of tender, may be obtained on application to Mr. G. Heyes, engineer and surveyor to the Council, Westhoughton, Lancs.

WEST LOOE.—May 11.—For the renewal of the roof of St. Nicholas Church, West Looe, Cornwall. Messrs. Sedding & Stallybrass, architects, Queen Anne Terrace, Plymouth, or Mr. Hurford, Fore Street, East Looe.

VARIETIES.

MR. HENRY WELLS DEWHURST THEOBALD, of Henley House, Spring Grove, Isleworth, late of 110 Great Russell Street, W.C., surveyor, left estate valued at £17,431.

IT is reported that two fragments of the old cross which originally stood on the south-east corner of Caerwent Churchyard, adjoining Great House, have been unearthed in the neighbourhood. The greater portion of the cross, on which biblical figures are beautifully carved, was discovered many years ago.

WATERPROOFED concrete is now used to construct receptacles for many kinds of liquids. We have been informed that a concrete reservoir containing brine was built two years ago at Droitwich. A recent report states that it is still quite leakproof. The powder Pudlo was used to waterproof the cement. A 5,000-gallon tank built at Cerne, Dorset, four years ago with Pudloed cement concrete is still perfectly watertight.

MR. WALTER TAPPER, F.R.I.B.A., architect to the Dean and Chapter of York, has designed the elaborately worked banner recently presented to York Minster by a layman. The banner is made of red damask silk and has the subjects of the "Crucifixion" on the front, and Christ giving the keys to St. Peter on the reverse side, represented entirely in needlework. At the lower corner of the banner is represented the west front of the Minster worked in silver.

THE Bradford Master Painters' Association issued last week the following advertisement: "The painters of Bradford are striking because they will not accept the award made by the Board of Trade, whose arbitrator officiated at the joint request of masters and men. We are prepared to abide loyally by the award made, and trust that the public will assist us by giving their work to their usual master decorators, and allowing the latter to defer it if necessary for a time or average it over a longer period."

THE Edinburgh Architectural Association and friends, to the number of about fifty, paid a visit on Saturday afternoon to Bruntsfield House (by permission of Vice-Admiral Sir George J. S. Warrender, Bart., K.C.B.), and to the Grange House (by permission of Colonel Kidston Kerr, C.B.). The leader of the excursion was Dr. Thomas Ross, F.S.A. Scot., who submitted a plan of Bruntsfield House, and gave a description of the architectural features of the building. Mr. Moir Bryce gave a history of the Warrender estate. Descriptions were also given regarding the Grange House, where the party were entertained to tea by Colonel and Mrs. Kidston Kerr. Votes of thanks were given on the motion of Mr. Maclennan, A.R.I.B.A., president of the Association.

A COMMITTEE of the Dudley Town Council have issued a report in reference to the Corporation scheme for the erection of 300 houses. They had accepted tenders by the following contractors:—Mr. William Roe (Wolverhampton), for the erection of thirty houses; Mr. Thomas Higgs (Wolverhampton), fifty-four houses; Messrs. Jenkinson & Davies (Rhondda), forty houses; Dudley Amalgamated Builders (Dudley), ninety houses; Messrs. Rogers & Sons (Cardiff), eighty-six houses; Messrs. Lewis & Taplin (Birmingham) for the construction of new roads and sewers on the Brewery Fields estate (the site of the scheme), and for the widening of Bunns Lane and St. John's Road, and the construction of new sewers therein. The time limits attached to the contracts range from two to five months. The total contract prices amounted to £81,045 for the houses and £7,127 for the roads and sewers, compared with the following estimates: Houses, £84,471; roads and sewers, £9,624. The figures for the houses are exclusive of £3,500 for extra foundations and contingencies.

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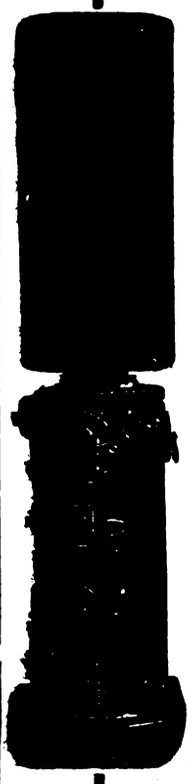
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THE RELATION OF LIGHTING TO ARCHITECTURAL INTERIORS.*

By MORGAN BROOKS.

AT first it appears surprising that an architect who has successfully produced a beautiful interior should relegate the lighting thereof to an uninspired subordinate, or even leave it to chance, with results often so inharmonious as to obscure his art. Doubtless this is partly due to the fact that the architect did not visualise his illumination with his interior plan, and will not or cannot give it afterthought, and partly because he is not seriously disturbed by the incongruous lighting of an interior which appeals to him as beautiful with or without light, so powerful is his original idea. Probably one specially trained in illumination, who has artistic perceptions, and is eager by skilful lighting to point out to others the beauties of an architectural design, and to soften any defects, will obtain better results than could the architect himself.

It has been customary enough for architects to design their specially built gas and electric fixtures, but it will be agreed that, as a rule, the harmoniousness of these fixtures is felt more by day than by night. There is a certain antique conventionality inherent in a porcelain-candle miniature-lamp design that makes it hopeless to derive therefrom adequate modern flood lighting.

The rapid advance in lamp making which gives us powerful units also necessitates new methods of indirect or concealed sources to avoid glare. Yet possibly the successful attempt to introduce light from nowhere has outdone itself, as the logical mind is baffled by the absence of a source of light.

Not only is it a satisfaction to know whence light emanates, but it is artistically pleasing to have illumination non-uniform. Indeed non-uniformity is a neglected means of success in architectural appreciation by light. When we admire a cosy-corner in a home, its attractiveness results from its being set apart from the rest of the room by its furnishings. A table lamp with an attractive shade provides good illumination but over only a limited area. Take away the table lamp and flood the corner with superfluous light, and all cosiness is gone.

In a similar manner much of the artistic taste in the design and furnishing of a room is nullified by immoderate or by monotonous lighting. When a room is completely lighted it is grasped at a glance, and maintains no interest. If only the centre table is illuminated there is opportunity for the play of the imagination in the darker spaces, and the room appears larger. Of course, if the entire room is to be occupied, as is a concert hall, it must be completely lighted; but even here the effort to obtain uniform illumination may result in diminishing the attractiveness of the room. Given a concert hall that is unduly long, with a platform at one end and entrances at the other; if evenly lighted the first glance discloses the full length of the hall and the extreme distance to the platform from the rear. Now let the stage be overlighted, the centre only moderately lighted, and let the rear, under the balcony, have an intermediate illumination. On entering, the stage is conspicuous, and the middle portion of the hall loses a few rows of seats, bringing the rear seats decidedly nearer to the stage. Of course, the differences must be skilfully managed to show no sharply dividing lines, and the minimum must be up to programme-reading standard. When such irregular illumination has a valid psychological basis it proves acceptable, although often unnoticed. To diminish the length of a hotel corridor this scheme of graded lighting is inadequate; but if the mid-length is well lighted, especially by visible lamps, while the portion beyond is less brightly lighted and from concealed sources, the ordinary vision hardly goes beyond mid-length.

To take another case, a wide room will appear longer when the side walls are illuminated more than the ends, which then recede. The effect is enhanced if the ceiling-wall line is somewhat indeterminate, as the eye judges not merely by illumination but also by geometrical outline. Experiments show that a difference of the order of 10 per cent. may be produced in the apparent distance of a wall by altering its illumination.

Photographic art teaches us that pleasing contrasts may be produced by proper management of light, suggesting possibilities in artificial lighting of interiors often artistically superior to that of daylight. Fairly bright illumination is necessary to bring out a colour scheme, while if form alone is to be shown, contrasts may be increased or diminished by throwing more light on the brighter surfaces or on the darker. In this way desirable contrasts may be enhanced, and undesirable ones subdued. Thus to display a colonnade the columns should be accentuated by illumination if naturally bright; but if dark, should be silhouetted against a well-lighted background. Shadows should be produced. For extreme conspicuousness they should be made to run quartering by a 45° position of lamps. On the other hand objectionable pillars can easily be made inconspicuous, if they are rectangular, by dimly illuminating their surfaces to agree with a dull wall behind. In the case of round columns only perfectly diffused lighting will cause their rotundity to merge into the background. Pilasters, always an architectural embellishment, should be brought out by throwing their projecting sides into comparative darkness.

Any artistic feature of a house, such as an oil painting, a choice bit of furniture, or a handsome stairway, may be emphasised by superior illumination, just as a masterpiece of sculpture in a art gallery is specially lighted. Care must be taken, however, not to overdo this, or an exaggerated theatrical spot-light effect may result. These effects depend wholly upon relative illumination, and are equally possible with dim or brilliant general lighting. The beauty of a landscape is enhanced at sundown by the lengthening shadows of directed but diminishing light. Modern powerful high-efficiency lamps tend toward a lavish use of light often in entire disregard of artistic proportionality, imitating midday glare.

Psychological as well as artistic considerations suggest varying the illumination progressively for one entering a house. Finding the vestibule brighter than the entrance steps, the hall brighter than the vestibule, and the reception room brighter than the hall, a guest is insensibly directed by the increasing light in a hospitable manner. Where a valid reason for illumination differences exists, dependent on the use and the relative importance of the various rooms, pleasure is felt in the lighting interpretation, even when the means are not recognised. When the conditions are disturbed, perhaps merely by failure to replace a burned-out lamp correctly, the discord is felt by one at all sensitive to harmony in illumination.

Much thought is required to adapt lighting to the varying uses of a house. The best preliminary to lighting plans is to make an imaginary tour of the building with its owner or occupant, asking what the colour scheme will be, what vistas must be kept unobstructed, the purpose of this room and that, and how they will be furnished. Beginners in illumination often overlook the light absorption by dull portieres and furniture, which darken a room. The quantity of light required increases with the surface area. A rectangular desk shoved into a corner adds nothing to the room surface, but if set out in the middle of the room all its vertical sides are additional. Thus, in a public library, book-stacks often more than double the area requiring illumination.

A good example of alternative lighting of a room, adapting it to different demands, is seen in the flood lighting of a hotel dining-room for use at a general banquet, and in the cozy table-lamp transformation with meagre general illumination, when it is desired to provide as many separate tables as possible for private parties. Indeed, the manager of a large hotel remarked that when the dining-room was thus lighted it was surprising how loudly the guests talked, as if no one were

* A Paper read at the mid-winter convention of the Illuminating Engineering Society, New York.

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within hearing. Similarly a public reading room may have table lamps suggesting a privacy conducive to study, or may have a blaze of general lighting satisfactory for desultory reading, points of view justifying the combination of both methods.

Completely diffused lighting is wearisome, as evidenced in "white kitchen" restaurants, and there is one advantage in partially directed light not always recognised. Eye fatigue is relieved by change in illumination which causes a change in the adjustment of the eye muscles. When reading by direct light a slight movement of the paper produces such relief, perhaps unconsciously; but with diffused lighting no relief is possible. This explains why in inverted lighting the effect is better with relatively dark walls, as they absorb the horizontal rays, and the light comes only from above.

The well-known unsatisfactory combination of artificial illumination and daylight is in part due to the mingling of horizontal and vertical rays, although colour difference is also important. Architects avoid cross window lights, yet often specify strictly bracket lighting for a room, with brackets on every wall. When all are in use simultaneously there is objectionable cross-lighting and glare.

Freedom may be urged in the placing of fixtures unsymmetrically except in rooms of extremely formal symmetry. Doors and windows are seldom regularly placed. Furniture must be arranged with reference to doors and windows; why not locate lighting fixtures with direct relation to the furniture? In factories utility governs location. In an artistic interior appropriateness governs, and this includes use as well as beauty.

Since the common arrangement of inverted lighting produces symmetrical and almost uniform illumination, it may seem that the artistic variation proposed would demand a return to direct lighting with its glare. It is true that extreme differences may require direct lighting, but semi-indirect and even direct lamps may be made much less diffusing than usual. There is opportunity in the development of oval or even boat-shaped bowls in semi-indirect lighting for sending out most of the light laterally. Moreover, it is possible to design one side of such elongated bowls for superior brightness, without diminishing their artistic appearance, and thus give the unsymmetrical light distribution suited to special needs.

A new method of directing inverted rays is found in a grooved ceiling. The resultant distribution depends upon the lamp reflector as well as on the shape of the grooves. With V-shaped grooves the locus of maximum floor illumination is not directly under the fixture but is an ellipse with major axis transverse to the direction of the grooves; while strangely enough, loci of lesser illumination are elliptical figures, whose major axes are longitudinal. With a V-ceiling a single row of inverted lighting units placed somewhat nearer together than usual will serve a wider room than with a smooth ceiling. Also the brightness of the ceiling immediately over the lamp is reduced. A grooved ceiling will direct downward much light that is now wasted on upper walls, but the use of such a ceiling is suggested for directing light rather than for economy. Since distribution from a grooved surface depends on the shape of the grooves, independently of their size, the grooves may be minute, when the appearance would not differ noticeably from the usual ceiling. Such markings can probably be impressed upon fresh plaster at moderate expense, and in steel ceilings it is evident that fine grooves can be manufactured if demanded.

Whether these means or others are adopted, there should be a reaction from the too complete diffusion of modern inverted lighting, with appreciable gain in artistic effect.

The Alexandra Hotel, Bridlington, has recently been purchased by Mr. Percy S. Newbound, Ferriby, with a view to practical rebuilding at a later date. The alterations will include 300 new bedrooms and four or five open baths.

VARIETIES.

Mr. John Withers Sheppard, of Curzon House, Gotham, Notts, plaster manufacturer and gypsum miner, including bequests to employees, left gross estate of £33,507.

Captain Purcell, Chief of the Dublin Fire Brigade, estimates the value of the buildings destroyed by the fires on the east and west of the Sackville Street area at £1,100,000, and he further states that a very rough approximation of the loss in stock must be put at over three-quarters of a million. The buildings involved in the fires number 179.

A new Bradford municipal building, composed of branch library and cottage baths, has just been opened at the junction of Undercliffe Street and Tennyson Place. The library is the twenty-sixth branch library in the city, and provision will be made for 12,000 volumes, all of which are free to the access of the public. The cottage baths are the last of thirteen approved by the Council in January 1914. The cost of the new premises has been £6,780.

An addition to Central Senior School, Gourock, at an outlay of £4,500, has been formally opened. This extension consists of a three-storey wing to the north-west of the present school in Binnie Street, and comprises four additional class-rooms, gymnasium, and headmaster's room. The gymnasium is on the ground floor, measures 52 feet by 22 feet, and the separate changing rooms for boys and girls provide spray baths and lockers for the pupils. The architects were Messrs. Alex. Cullen, Lochhead & Brown, Hamilton.

At the last meeting of the Lunatic Asylum Visiting Committee of Plymouth Borough Council a letter was received from the Board of Control stating that they would not be justified in considering the plans of the proposed extension of the asylum, which had been submitted to them, in view of the present necessary restrictions and financial stringency. The estimated cost of the proposed extension is £100,000. The idea of the Corporation was to get the preliminaries over now in order to be able to start the work when the war finished. In January 1915, when the scheme was approved, it was stated that it was hoped to accept a tender eighteen months hence, and no charge would fall on the ratepayers until the financial year 1917-18.

The issue for 1916 of the "Mercantile Year Book and Directory of Exporters" is just to hand, and possibly the greatest compliment we can pay to it is the statement that what the "Post Office Directory" is to the general public or the "Kelly's Building Trades' Directory" to the building trades, the "Mercantile Year Book" should be, and undoubtedly is, to the merchant. The publishers are Messrs. Lindley Jones & Brother, of 16 St. Helen's Place, London, E.C. The Editor points out in this year's edition the difficulties of publication at the present time; but, despite this, he justly prides himself on the fact that he has been enabled to issue a comprehensive list of both importers and exporters, and also a list of Belgian firms temporarily established in this country, a Black List of enemy firms abroad, and the list of traders in China and Siam with whom trading is permissible.

The fifty-fourth annual meeting of the shareholders of the London and Lancashire Fire Insurance Co., Ltd., was held on April 26 at the Law Association Rooms, Cook Street, Liverpool. Mr. J. H. Clayton, the chairman of the board of directors, presided, and said that the fact of the company during the present difficult period doing well and being able to submit an account which bears favourable comparison with previous records, was not because of the absence of difficult conditions, but because these difficulties have so far been satisfactorily surmounted. Fire premiums have increased by £60,934 from £1,655,713 to £1,716,647, and, excluding interest, the real profit, after deducting income-tax and provision for the increased liability, is £166,091. In the accident account the premiums are almost exactly the same amount as in the previous year, and the net underwriting result similarly arrived at is £64,699. The marine account has been affected by special circumstances, and the premiums show a large increase from £235,256 to £359,451. This increase, however, is rather adventitious and due largely to the premiums for marine war risks, the results of which have so far been satisfactory. After all deductions and with the usual provision for the increased liability, the net marine profit is £44,450. These underwriting results demonstrate that in 1915 the company has again made substantial progress. The total premium income is now £2,985,081, against £2,799,044, a solid advance indicative of the steadily growing power and strength of the company.

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THE
Architect and Contract Reporter.
FRIDAY, MAY 12, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITION OPEN.

DUBLIN.—June 15.—The Senate of the National University of Ireland invites designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2*s.* deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

BRISTOL.—May 13.—For the following works, for the Guardians—viz.: (*a*) stuccoing and painting external walls of Bradley Villa, Manor Road, Fishponds; (*b*) painting, &c., hospital wards 4, 5, 8, and 9 at Eastville institution; (*c*) plastering, painting, &c., wards 187 and 188 at Eastville institution; (*d*) plastering, painting, &c., rooms 152A and 153 and ward 152 at Eastville institution. Mr. J. J. Simpson, clerk, St. Peter's Hospital, Bristol.

CRUMLIN.—For erection of a small (C.M.) Forward Movement hall at Crumlin. Deposit £1 1*s.* Mr. R. S. Griffiths, M.S.A., architect and surveyor, Tonypandy.

FARNBOROUGH.—May 15.—For alterations to their premises in Lynchford Road, for Messrs. Timothy White Co., Ltd. Apply at Lynchford Road, Farnborough.

HULL.—May 18.—For the builders' and ferro-concrete work in connection with extension of the electrical plant at the electricity works, Sculcoates Lane, for the Corporation. Mr. F. W. Bricknell, city engineer, Guildhall, Hull.

HYTHE.—May 31.—For the construction of six bastions to sea wall, one flight of steps, four additional timber groynes, and extension of one existing groyne on or adjacent to the foreshore at Hythe, for the Corporation. Deposit £1. The Town Clerk, Hythe, Kent, or at the office of the consulting engineers, Messrs. Douglass, Lewis & Douglass, 15 Victoria Street, Westminster, London, S.W.

IRELAND.—May 24.—For re-roofing and renovating Kilmanaghan Chapel, Tubber, co. Westmeath, for the Very Rev. J. L. Magee, P.P. Deposit £1 1*s.* The Parochial House, Tubber, or Mr. T. J. Cullen, M.R.I.A.I., architect, 25 Suffolk Street, Dublin.

ISLE OF WIGHT.—For the rebuilding of Stanwell Farm House, Bembridge. Mr. S. E. Tomkins, architect and surveyor, 30 Holyrood Street, Newport, I.W.

KENDAL.—May 17.—For carrying out various improvements to the "Seven Stars Hotel," for Mr. Edward Rishton. Mr. S. Shaw, F.R.I.B.A., architect, Kendal.

MANCHESTER.—May 24.—For additional ambulance accommodation at Goulden Street, for the Watch Committee. Send £1 1*s.* deposit to the City Treasurer. The City Architect, Town Hall, Manchester.

MYTHOLMROYD.—May 24.—For works comprised in the formation of site for marshalling sidings and construction of offices, &c., at Mytholmroyd, for the Lancashire and Yorkshire Railway Company. The Engineer's Office, Hunt's Bank, Manchester.

PENGAM.—For erection of a school chapel to be erected at Pengam. The Surveyor's Office, Pengam Garden City, and 3 Dumfries Place, Cardiff.

RAINHAM.—May 30.—For repair of the sea wall at Motley Hill Farm, in Bartlett and Otterham Creeks on the River Medway, for the Rochester and Chatham Joint Sewerage Board. Mr. W. Banks, A.M.I.C.E., Guildhall, Rochester.

ROCHESTER.—May 16.—For certain additions to the fire station, the Common, for the Corporation. Mr. W. Banks, A.M.I.C.E., city surveyor, Guildhall, Rochester.

SCOTLAND.—May 17.—For mason, carpenter, slater, and plaster works of alterations and additions to dwelling-house at Collieston, Lumphanan (Mr. Alexander Ferries, tenant). Mr. G. Cocker, estate ground officer, Lumphanan.

TUNSTALL.—For the various works required in the alterations and additions to the Sportsman's Arms, Tunstall, near Catterick, Yorks. Mr. G. W. Atkinson, architect, 1 Mark Lane, Leeds.

WARRINGTON.—May 16.—For extension of buildings, for the Electricity and Tramways Committee. Deposit £1. Mr. S. P. Silcock, architect, 6 Egypt Street, Warrington.

YEOVIL.—May 25.—For the erection of twenty-five houses for munition workers at Westland, in the parish of Yeovil Without, together with certain drainage and other work for the Rural District Council. Deposit £1 1*s.* Messrs. Petter & Warren, architects, Church Street, Yeovil.

TENDERS.

IRELAND.

For the erection of a hall, for the Orange Lodge, Pettigo. Messrs. F. E. TOWNSEND & SON, architects, Enniskillen.

A. & G. Freebarn	£665 0 0
Bloomfield	665 0 0
McBride	640 0 0
S. MOORE, Boyaghan, Irvinestown, co. Fermanagh (*accepted*)	575 0 0
McMahon (*withdrawn*)	437 15 0

WALES.

For the erection of a school at Beulah (Cardigan) for the county education authority. Mr. G. DICKENS-LEWIS, Licentiate R.I.B.A., M.S.A., county architect, Aberystwyth.

Davies & Evans	£977 15 0
Thomas & Lewis	959 0 0
Tom Morgan	874 0 0
Thos. Jones	848 10 0
POWELL & RICHARDS, Brongest (*accepted*)	816 0 0

MR. THOMAS GAMMAGE COSFORD, of Hazlewood Road, Northampton, retired builder, died on December 20, leaving £48,166.

AMONG the plans submitted for the consideration of Grimsby Corporation Buildings Plans Committee at the monthly meeting was one for the construction of a cellar beneath the residence of a well-known resident. "Is it necessary to deposit plans before you can build a cellar?" asked a Councillor. "Yes, if it's intended for human habitation, as this is—at certain times," said the Borough Surveyor. "Is it a funk-hole?" asked the Councillor curiously. The plan was passed.

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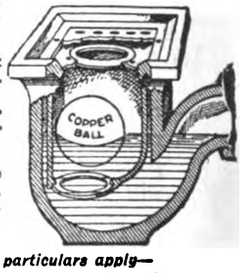


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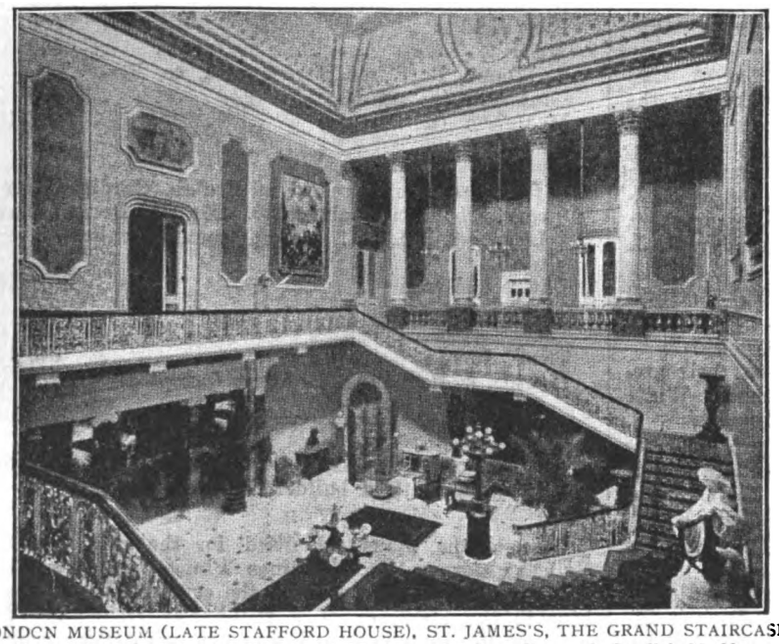
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CONSTRUCTION OF CONCRETE PURIFIERS AT ROMFORD IN 1913.*

By W. D. CHILD.

THE author had for some time given consideration to the question as to whether the construction of purifiers in their simplest form—*i.e.*, when resting upon or sunk into the ground—might not be more economically effected by the use of Portland cement concrete than with the usual cast-iron plates.

Having become acquainted with the "Winget" concrete block-making machine and the variety of material that may be produced by its use, he resolved to go more closely into the question of the cost of concrete construction. By using suitable proportions of crushed clinkers, breeze, sand, and Portland cement, he found that blocks measuring 32 in. by 9 in. by 9 in. could be produced at a cost of 10*d.* each, and quoin blocks, closers, and other shapes at proportionate rates. By the use of these blocks, the construction of the purifier boxes would be carried out without the erection of any timber framework or shuttering, and in this way considerable economy would be effected.

He therefore prepared plans and estimates for the construction of a set of four concrete purifiers, each 30 ft. by 20 ft. by 5 ft. 6 in. internal dimensions. The work was put in hand in June 1913, the company undertaking the erection of the concrete boxes, while the ironwork was in the hands of well-known contractors.

An excavation was made approximately 88 ft. long by 33 ft. 2 in. wide and 6 ft. deep; the sides being cut truly vertical, and the bottom accurately level. Over the whole surface of this bottom, Portland cement concrete, 18 in. thick, was placed in two layers, each 9 in. thick.

In placing the concrete in position, the surface was at once faced with a finer and richer concrete, so as to form a conglomerate mass of perfectly level concrete, requiring no surface rendering—the latter having a tendency to scale-off. Upon this level bottom, the outside and the division walls were distinctly marked out, and the builders commenced setting the concrete blocks.

The outer walls were faced on the inside with blocks 9 in. deep and 9 in. wide, with quoin blocks built in to bond with the division walls; and these blocks were backed-up to the solid earth with 9 in. of mass concrete. This was put in when each two courses of blocks had been set in position.

The division walls were built with blocks 9 in. deep by 8 in. wide, set 2 in. apart; the space being filled in with Portland cement grout, forming a solid wall 18 in. thick. When the work arrived at the proper height, this space was used to receive the holding-down bolts of the cast-iron coping plates. The bolts, being accurately placed in position, were then grouted-in solid.

Two courses of Staffordshire blue brick were built at certain positions into the walls with 2-inch projection; and these served to support the ends of grids carrying the purifying material. The bearing bars for the wood grids are supported on concrete corbel blocks, built into the walls.

As soon as the walls were raised to the full height, the upper surface was rendered with good Portland cement compo, ¾ in. thick; and when this had thoroughly set and dried, it was painted with boiled oil to form an adhesive surface for the jointing material used in bedding the cast-iron coping plates.

To ensure the concrete walls of the boxes being gas-tight, the whole of the inner surface was dressed with "Ironite."

The "Ironite" is mixed with water in a pan in small quantities, kept constantly stirred, and applied to the face of concrete with a stiff brush, stippling it well into the pores of the concrete. For the work in question, the author used two coats—allowing the first coat to rust and dry before applying the second—and in this way secured a sound job.

"Ironite" was used in preference to cement rendering. The method of application fills up all cavities in the concrete, and chemical and mechanical union takes place between the "Ironite" and the surrounding surface with but little probability of any subsequent parting, as frequently occurs with cement rendering.

The prominent features of the work to which attention may be drawn are:

Use of concrete blocks, dispensing with all timber framing.

Coating with "Ironite" to render the concrete gas-tight.

The use of timber for bearing bars in place of steel, which rapidly deteriorates through contact with oxide of iron.

The type of wood grids adopted for use, and jointing all connections with the tallow joint.

The principal object, however, was, by the use of different material and method of construction to that generally employed, to reduce the first cost of the plant.

* Abstract of a Paper read before the Southern District Association of Gas Engineers and Managers.

WATER HAMMER.

By WILLIAM RANSOM, A.M.I.C.E. (Assistant City Surveyor, Worcester).

HOUSEHOLDERS and others are frequently alarmed by mysterious sounds and noises in their water pipes, and are apt to imagine they are in daily danger of some form of explosion. The following short article from the Journal of the Institution of Municipal and County Engineers gives an account of how some of these noises are caused and makes suggestions for their remedy:—

Students will be familiar with the philosophical instrument known as the water hammer, which explains the cause of many of the noises. A glass tube is half-filled with water and when the water is raised to boiling point to expel the air, the end of the tube which is formed into a globular shape, is sealed. When the instrument is held vertically and quickly moved up and down the water will knock against the ends as if it were solid, and produce the sounds known as water hammer. If the instrument be held upside down and the water allowed to fill the globular end, and then reversed, the water will escape through the narrow opening of the globular end like a stream of small pebbles falling to the bottom. The noises are caused by the water falling through a partial vacuum.

In domestic hot water supplies similar noises are caused by inattention to the minor details of construction.

The boilers are sometimes fixed unevenly, and an air or steam space is formed at the top, and upon the sudden condensation of the steam the water will thump against the sides of the boilers. A similar effect can be produced in boilers by allowing the flow pipe to project into the boiler.

Noises are also caused in hot water supplies when the boiler is heated too rapidly and the circulation pipes are long. Bubbles of steam are formed which cause the thumping of water.

In cold water supplies noises frequently occur in cisterns, caused by the vibration of a weak ball valve; while "rattle" or "check" noises are often heard at stop cocks and bib taps owing to the accumulation of a little air.

Water hammer, besides being a domestic nuisance, may be a source of great trouble in the distribution of water upon a large scale. It is known as water ram, and is caused by the effect of impact from the sudden arrest of motion of a column of water in the mains. The momentum which is lost by the water is expended by slightly distending the main and also by a certain amount of compression.

Sir R. Binnie experimented in 1887 with a ¾ inch pipe 114 feet long which was taken off the water main. A

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plug cock was provided with an effective waterway of .152 square inches. He recorded the following pressures in pounds per square inch:—

Position of Cock.	Pressure at the Cock.	Pressure at the Main.
Cock closed...	125	125
Cock open	20	120
Cock shut quickly	550	220

The great effect of water ram will thus be seen and how such an increase of pressure may have a very injurious effect upon water mains.

Mr. Weston in Vol. XIV. of the Transactions of the American Institution of Civil Engineers makes the following conclusions as to his investigations of the subject. He says that the pressure due to hydraulic impact varies with a lower power than the square of the velocity, and that with the same velocity the intensity of pressure developed is higher in larger than in smaller pipes. Therefore, when dealing with large water mains heavy blows may be expected, and a large factor of safety should be provided to prevent fracture of the pipes.

As a general precaution against water ram, all valves should be closed slowly so that the flow of water should not be suddenly impeded. As far as possible valves should be placed at the top end of works. Relief valves can also be provided which, upon any sudden increase of pressure, will permit the escape of a small quantity of water to relieve the pipes from concussion.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 4,951. March 31, 1915.—Moritz Kahn, Caxton House, Westminster, and A. W. Ruddle, 6 Long Causeway, Peterborough. Floors, roofs, and similar portions of building structures.

5,119. April 3, 1915.—W. A. Wilson, Carlton Works, Armley, Leeds. Moulding clay or like radiants used for gas fires.

5,227. April 7, 1915.—Fred. Thackeray, 3 Cambrian Terrace, Gwaelodygarth Road, Merthyr Tydfil, Borough Architect. Curved travelling templet or shield with shaft hinged at the centre-point of movement for the construction of domes.

5,316. April 8, 1915. (Dated under International Convention, April 11, 1914.)—R. S. Stokvis-Zonen, Ltd., 594 Westzeedijk, Rotterdam. Gas stove.

6,157. April 24, 1915.—A. E. McKean, Hazard, Totnes, Devon, and W. G. Trethewey, 14 Braddon Hill Road, Fleet Street, Torquay, and C. C. Plucknett, 38 Poland Street, W. Fastenings for hinged or pivoted windows and the like.

6,333. April 28, 1915.—Edward Johnson, 87 Hall Street, Burslem, Stoke-on-Trent, and William Boulton, Ltd., Navigation Road, Burslem, Stoke-on-Trent. Tile and like presses.

11,045. July 30, 1915.—Joseph Thomas, Mardy Street, Cardiff. Apparatus for mixing lime.

17,713. Dec. 18, 1915.—G. A. C. Thynne, Victoria Tile Works, Hereford. Electrically heated stove or open fire.

6,868. May 7, 1915.—H. A. Taylor, Midland Blind Works, Syston, Leicestershire. Blinds, screens, shutters, and the like.

4,770. March 27, 1915.—The Richmond Gas Stove and Motor Co., Ltd., and Harold Hartley, Academy Street, Warrington. Gas fires.

5,709. April 16, 1915.—Henry Pratt, "The Dingle," Goldieslie Road, Wylde Green, Warwick. Heating and sanitary engineer. Household baths.

9,699. July 3, 1915.—Henry Folland, "Brondeg," Glanamman, and William Griffiths, 2 High Street, Glanamman, Carmarthen. Apparatus for painting plain or corrugated or other metal sheets.

13,723. Sept. 27, 1915.—W. A. Smyrk, Melbourne House, Heriot Road, Hendon, N.W. Builder. Picture rails and hooks.

5,990. April 21, 1915.—James Slater & Co. (Engineers), Ltd., and C. R. Allensby, 50 Wells Street, Oxford Street, W. Heat radiators.

Any of the above specifications may be obtained from J. D. Roots & Co.

VARIETIES.

MR. JOSEPH MASON, builder and contractor, of Buckhurst Hill, has left estate to the value of £20,500.

CAPTAIN SIDNEY W. CRANFIELD, Middlesex Regiment, has been promoted Major—temporary Lieutenant-Colonel.

THE death occurred last week at Rothwell, Kettering, of Mr. Frederick Barlow, aged sixty, a well-known contractor. Deceased was one of the most prominent Liberals in the county and unsuccessfully contested North Northamptonshire in 1900.

AT the last meeting of the Torquay Town Council General Spragge called attention to the condition of a mediæval building on Chapel Hill. This chapel, he said, dated from the thirteenth century, and was of exceptional interest. Fir trees had taken root on the roof, and the building would come down unless this was stopped. No one knew absolutely the origin and date of the chapel. It was supposed to be connected with Tor Abbey. The matter was referred to the Improvement Committee.

THE death has occurred at his residence, Gerard Road, Rotherham, of Mr. William Henry Banks, an artist and designer of some repute, says the *Sheffield Daily Telegraph*. For over thirty years the deceased pursued his craft at the works of Messrs. J. & R. Corker, stove-grate manufacturers, Rotherham, and in this capacity did much notable work. His talent won him success in Sheffield on many occasions, and for a long period he was one of the most gifted contributors to the Sheffield School of Art exhibitions. Early in his career he designed a stove for the Sheffield Masonic Hall, then in course of erection, and this was selected from amongst the drawings of many competitors and adopted by the authorities. In 1893 Mr. Banks gained the highest award open to any student at the Sheffield School of Art, the Duke of Norfolk's Prize, and for a number of years consecutively he gained premier honours in the Alfred Chadburn competition. Amongst his most treasured possessions were the bronze and silver medals conferred upon him by the South Kensington Museum, and he also held the Art Teacher's Certificate.

TRADE NOTES.

THE new Savings Bank, Leicester, is being supplied with Shorland's warm-air ventilating patent Manchester grates by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

THE Ironite Company, Ltd., 11 Old Queen Street, S.W., writing in reference to Mr. Child's paper on the new concrete purifiers at Romford (which we report on the preceding page), point out—in reply to a question raised as to the permanent effect of ironite—that when ironite has thoroughly matured it remains inert, and is consequently not affected by gases, and acts as an efficient protection to the concrete. Also should any cracks appear in the concrete these can be easily repaired with ironite, applied either internally or externally. We might finally mention that the War Department and the Admiralty are using ironite extensively; 300,000 to 400,000 yards of concrete hutments, &c., have been treated with ironite and several large reservoirs. Ironite flooring is also being much used in munition factories.

THREE authorities—viz., the Ripon Corporation, and the Ripon and Wath Rural District Councils, have united in the proposed purchase of a motor fire-engine for Ripon and the surrounding district. A joint conference of representatives of these authorities was held for the purpose of considering tenders, and, acting on expert advice, this conference resolved to recommend the acceptance of Messrs. Merryweather & Sons' tender for a "Hatfield" petrol motor fire-engine of the new Light Brigade design. The recommendation was adopted by the Corporation, and the order has now been placed. It may be mentioned that the type chosen is one which has been specially introduced by the makers for service in country districts. It is capable of delivering 250 gallons a minute, and the engine for Ripon will be fitted with a "first-aid" tank, from which the pump can take a supply of water for delivering a small jet immediately the scene of action is reached. A 35-foot extension-ladder will be carried, and the engine will also be provided with ample accommodation for hose and gear. No less than 3,600 feet of canvas delivery hose will be included in the equipment.

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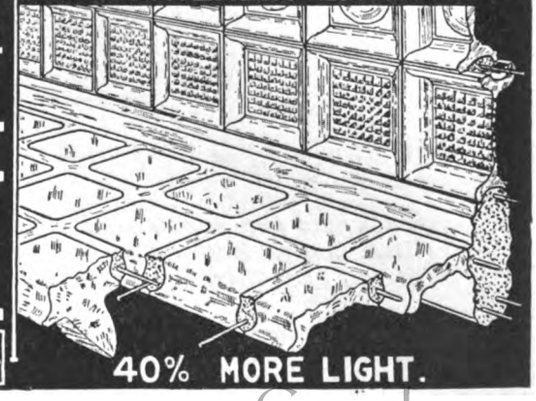
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THE

Architect and Contract Reporter.

FRIDAY, MAY 19, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

**** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITION OPEN.

DUBLIN.—June 15.—The Senate of the National University of Ireland invites designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2s. deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

GLOSSOP.—For pointing the Post Office Buildings, Norfolk Square, Glossop; also for painting the whole of the outside of the Central Premises (Norfolk Square), including the Post Office Buildings, for the Glossop Co-Operative Society, Ltd. The Office, 2 Railway Street, Glossop.

HYTHE.—May 31.—For the construction of six bastions to sea wall, one flight of steps, four additional timber groynes, and extension of one existing groyne on or adjacent to the foreshore at Hythe, for the Corporation. Deposit £1. The Town Clerk, Hythe, Kent, or at the office of the consulting engineers, Messrs. Douglass, Lewis & Douglass, 15 Victoria Street, Westminster, London, S.W.

IRELAND.—May 20.—For building new residence, including entrance walls, gates, avenue, bar fences, water supply and sewage works, near Rathcormac, co. Cork, for Mrs. Mary Hatch. Mr. W. F. Maye, C.E., architect, Fermoy.

IRELAND.—May 29.—For reconstruction of corn and flour mills at Ballyhaise, for the Cavan Central Creameries and Agricultural Society, Ltd. Mr. P. J. Brady, J.P., architect, Broomfield House, Ballyhaise.

MANCHESTER.—May 23.—For the erection of new boundary wall and gates at St. Mary's Home, Dickenson Road, Rusholme, for the Improvement and Buildings Committee. Send £2 2s. deposit to the City Treasurer. The City Surveyor's Office, Town Hall, Manchester.

MANCHESTER.—May 24.—For additional ambulance accommodation at Goulden Street, for the Watch Committee. Send £1 1s. deposit to the City Treasurer. The City Architect, Town Hall, Manchester.

MYTHOLMROYD.—May 24.—For works comprised in the formation of site for marshalling sidings and construction of offices, &c., at Mytholmroyd, for the Lancashire and Yorkshire Railway Company. The Engineer's Office, Hunt's Bank, Manchester.

RAINHAM.—May 30.—For repair of the sea wall at Motley Hill Farm, in Bartlett and Otterham Creeks on the River Medway, for the Rochester and Chatham Joint Sewerage Board. Mr. W. Banks, A.M.I.C.E., Guildhall, Rochester.

SEDBURGH.—For reroofing the farm buildings at the Moss Farm, Sedburgh. Mr. J. Stalker, architect, Kendal.

TOTTINGTON.—May 31.—For the construction of a retaining wall and culvert at Brandlesholme Road, Greenmount, for the Tottington Urban District Council. Mr. L. Kenyon, C.E., surveyor, Chapel Street, Tottington, Lancs.

WALES.—May 20.—For erection of two villas at Fforddygyfraith, Cefn Cribbwr, near Bridgend, for Mr. Rhys Thomas, Fforddygyfraith Farm. Mr. J. S. Griffiths, architect and surveyor, Charles Street, Bridgend.

YEOVIL.—May 25.—For the erection of twenty-five houses for munition workers at Westland, in the parish of Yeovil Without, together with certain drainage and other work for the Rural District Council. Deposit £1 1s. Messrs. Petter & Warren, architects, Church Street, Yeovil.

TENDERS.

LONDON.

For the execution of certain works required for adapting Evelyn Street, Deptford, depôt for the accommodation of trailer cars, for the London County Council.

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J. & C. Bowyer	1,879 0 0
F. & T. THORNE, Manchester Road, E. (*accepted*)	1,796 0 0

VARIETIES.

WAGES advances to carpenters and joiners have just been officially announced as having been granted at thirty-four districts in the United Kingdom.

THE Bardney Abbey excavations are to be opened for the summer months. The ruins of an imposing pile are exposed. There are the bases of twenty-eight pillars, the remains of twelve side chapels, and upwards of 100 interesting tombs. The oldest dated tomb is to Johanna, wife of John Brown, a Bardney merchant, who died on February 9, 1334. Another early one is that of "Hugh Branston, Abbot, 1382," who kept a pack of hounds in the Abbey. One of the altar slabs from the Abbey has been placed in the Parish Church to the memory of the late Vicar, the Rev. C. E. Laing, in appreciation of his work in connection with the excavations. Other buildings which have been uncovered include the chapter house, dormitories, infirmary, refectory, kitchens, abbot and priory houses, guest houses, and cellarium. There is on the grounds a museum of objects unearthed in the course of operations, comprising many beautiful pieces of stained glass, pottery, lead, knives, tools, spurs, buckles, coins, brass fragments, keys, pewter plates, and a fetter lock.

THE Committee on War Damage held a meeting of their Executive Committee last week, in the Hall of the Brewers' Company, London, with the Lord Mayor of York, President, in the chair. Letters from the Association of Municipal Corporations, President the Earl of Derby, were read, informing the Committee that the Association had resolved to join in the presentation of the Committee's Memorial to the Prime Minister. The following resolution was passed: "That the Committee reaffirm their determination not to ask the Prime Minister to receive their deputation until they are in a position to prove beyond fear of contradiction that they have the support of the country to the prayer of the Memorial—viz., that the Government abandon their scheme of war damage insurance, return the premiums already paid, and provide out of national funds for compensation to those who suffer damage from the attacks of the enemy. Further, that efforts be made by means of the county meetings to obtain the requisite support before the next payments of premiums become due, viz., July 19 next." The number of municipal authorities who have resolved to join in the presentation of the memorial has now increased to 430.

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NEW L.C.C. HALL.

THE Establishment Committee of the London County Council reported on February 22 the receipt of a letter, dated February 7, 1916, from the Ministry of Munitions of War stating that the Minister of Munitions had found it necessary, in view of the great shortage of labour for the construction of munition factories, to give directions under the Defence of the Realm Acts for the immediate discontinuance of the work now in progress at the new county hall, and that he had notified the contractors, Holland & Hannen & Cubitts, Ltd., accordingly. The Establishment Committee have since been in communication with the Ministry of Munitions and the contractors on the matter, and their chairman and some other members of the Committee conferred with Mr. K. P. Hawksley, of the Ministry of Munitions, and representatives of the contractors. They have now considered certain proposals which have been submitted by the contractors in connection with the closing down of the works. These proposals are as follows:—

(1) That the Council permit the architects to meet the contractors and advise upon the covering up and protection of the works during the suspension of operations, and to point out any further work which they consider should be undertaken in order to leave the building in a safe and proper condition. A separate account will be kept of the cost of this item, which can be dealt with either through the Council or direct with the Ministry of Mumtions as may be decided.

(2) That the Council agree to pay the contractors and sub-contractors for all work executed to the date of suspension, at contract rates.

(3) That the Council agree to pay the contractors and sub-contractors for all material specially purchased or worked for the new county hall buildings and delivered to the site or such other place as may be selected, and in the event of the latter any double handling to be taken into consideration either by the Ministry of Munitions or the Council.

(4) That the Council agree to the continuance of the preparation of the stone work so as to provide employment for the masons and expedite the building on the resumption of work, and provide a suitable site for the storage of the stone until required. If this clause is agreed to, it is suggested that the worked stone be inspected by architects and that which is passed be paid for at the rate of worked stone only, leaving fixing and cleaning down to be dealt with subsequently, together with any double handling involved.

(5) That the Council agree to the continuance of the preparation of steel construction so far as may be found possible in high tensile steel, similar to that now being rolled for Government purposes. This is to apply to straight bars only, up to but not including the roof. If this clause is agreed to, it is suggested that payment be made for material delivered only, and that fixing be dealt with when executed.

As regards (1), the Committee have informed the contractors that they are prepared to authorise the architects to advise them in connection with the covering up and protective works, but that any advice which may be given by the architects will be without any responsibility on their part or on the part of the Council, and that as regards the cost of the works the contractors should deal direct with the Ministry of Munitions.

As regards (2), the contract with the company provides that no certificate for payments on account shall be issued for amounts of less than £6,000, £4,000, and £2,000 in respect of permanent work executed and fixed in sections A, B and C respectively of the new building. In view, however, of the special circumstances arising from the closing down of the works, the Committee think that the Council may well agree to suspend the operation of this provision so that payment may be made for permanent work executed and fixed in the building up to the date of the stoppage of the work, although the actual value of such work is less than the foregoing minima amounts provided for in the contract. Such payments will not affect retention money and periods of maintenance, and no payments will be made direct to sub-contractors.

As regards (3), (4) and (5), clause XXV. of the contract provides that, subject to certain conditions, payment on account "shall be made to the contractors by the Council at the rate of 90 per cent. upon the value of permanent work from time to time executed and fixed on the site," but there is no provision in the contract for payment in respect of materials specially worked and delivered on the site but not fixed. The Establishment Committee think that, subject to proper safeguards, the Council may be disposed to authorise the architects to issue certificates for further payments to the contractors generally on account of the contract in order that payments on account may be made at the rate of 80 per cent. of the value of materials, stonework and steelwork delivered on the site, provided (i.) that the architects are satisfied that the materials and stonework have been specially prepared for the new county hall and are ready for fixing when delivered; (ii.) that payments for raw or unconverted materials shall be made only at the sole discretion of the architects, whose decision shall be final; (iii.) that high-tensile steel shall be used only at the sole discretion of the architects; (iv.) that the amount of such advances shall be redeemed by deductions from advances subsequently made on account of permanent work as and when the materials become absorbed in the permanent building; and (v.) that payment shall in no case be made for double handling. This concession could, of course, only be made on condition that it shall not in any way prejudice or affect the right of the architects under the contracts to reject such materials, or any of them, at any time during the continuance of the contracts.

Payments under (2), (3), (4) and (5) will be made to the contractors generally under the contracts without prejudice to any of their liabilities and obligations under the contracts and to the rights and powers of the Council thereunder, and subject to the accounts being adjusted from time to time after the work is recommenced on the site. The delivery of materials, stonework and steelwork, as suggested, should enable the building works to be expedited when resumed, but on the other hand it may involve the Council in additional expense by way of interest charges or in other directions. It is estimated that, assuming that the Council agrees to the Committee's proposals, the expenditure during the year 1916-17 in respect of the new building, excluding the river wall extension works, will not exceed £79,000, and they have made it a condition of the Council's assent to grant to the contractors the concessions now recommended that the amount to be paid to them during the year 1916-17 shall not exceed £75,000. In order to provide for the expenditure in question in the capital estimates for 1916-17, the chairman asked leave on May 16, 1916, to move the approval of a revised estimate of £85,180 in respect of the new county hall, including the river wall extension works.

The contractors have also raised the question of the general maintenance of the building, watching, lighting, &c., during the period of the stoppage of the works, and the Committee have informed them that these appear to be questions which should be dealt with by them and the Ministry of Munitions and not by the Council. They recommend:—

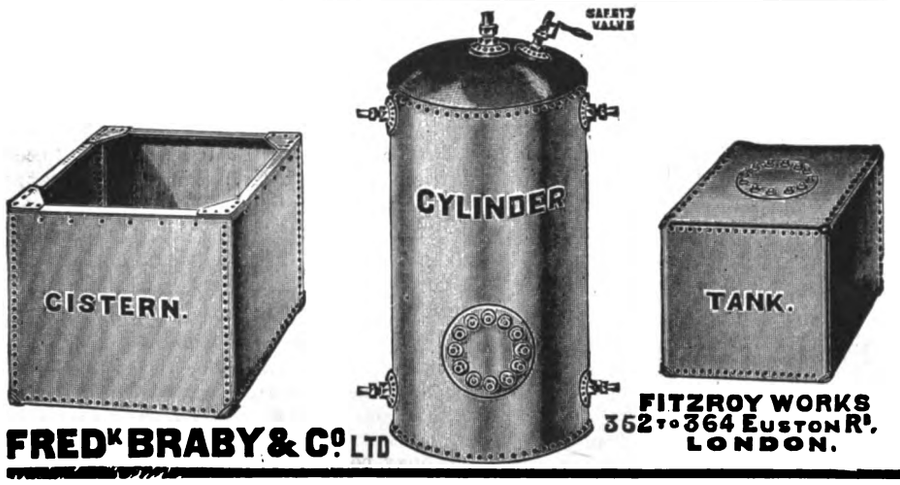
"That, notwithstanding the terms of clause XXV., relating to payments on account, of the contract with Holland & Hannen & Cubitts, Ltd., the contractors for the construction of the superstructure of the new county hall, the architects be authorised to issue certificates for further payments to the contractors generally on account of the contract, subject to the accounts being adjusted from time to time after the work is recommenced on the site."

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BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 3,674.—March 8, 1915.—Sheet-metal Buildings or Structures. F. W. Skinner, engineer, 41 Sherman Avenue, Richmond, New York, U.S.A.—This invention relates to sheet-metal buildings or structures of the kind that are composed of a number of sheet-metal units connected together at their edges. The sheet-metal structure is composed of a plurality of sheet-metal units having double or U-shaped longitudinal flanges extending substantially at right angles with the web of the unit, the U-shaped flanges being in engagement with single flanges of channel-shaped sheet-metal units alternating with the first-mentioned units. In another form of the invention a sheet-metal structure is composed of sheet-metal units each having two double U-shaped flanges arranged at right angles with

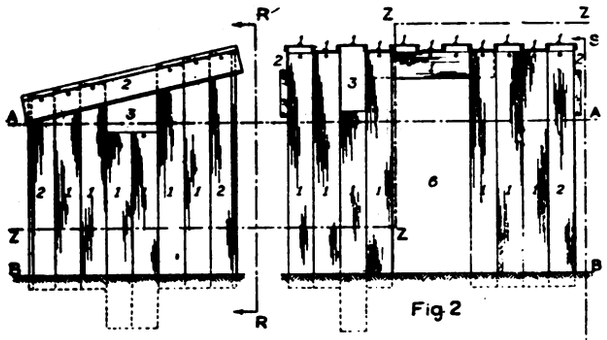


Fig. 1

Fig. 2

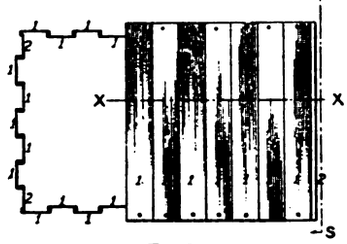
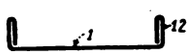


Fig. 3


Fig. 4

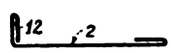
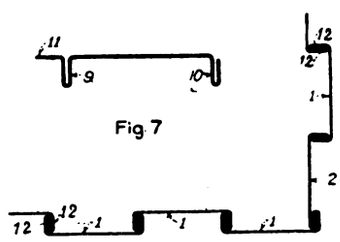
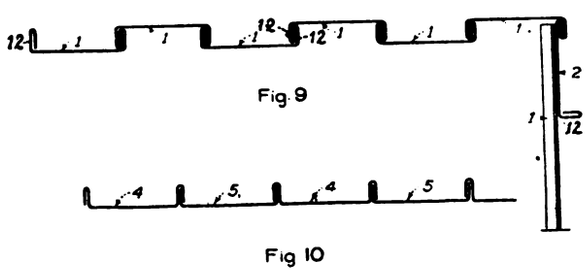
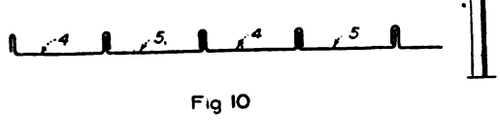

Fig. 5


Fig. 6

Fig. 7


Fig. 8


Fig. 9


Fig. 10

the web, and sheet-metal units having one U-shaped flange arranged at a right angle with the web and one U-shaped flange arranged parallel with the web. Fig. 1 is an end elevation at S—S of figs. 2 and 3, of a house or shelter. Fig. 2 is a side elevation at R—R. fig. 1. And fig. 3 is a sectional plan at Z—Z of figs. 1 and 2, the details of the interlock being merely suggested in said figs. 1, 2, and 3, to avoid confusing the said figures. Fig. 4 is a cross section of a regular standard unit used for the construction of walls, roofs, and the like. Fig. 5 is a cross section of a unit used in conjunction with the standard unit shown in fig. 4, for corner connections between walls, and at the ends of roofs, &c. Fig. 6 is a cross section of a modification of the standard unit 1, whereby the body or web is greatly strengthened by being bent curved or convex at 14 so as to permit of a greater width. Fig. 7 is another modification of the standard unit 1, with the short legs of the U-flanges turned outwards. The short legs may have an extension 11 of flange 9 as shown, or this extension may be omitted as shown in flange 10. The extension or extensions 11 form an overlap to give additional protection at the joints. Fig. 8 is an enlarged horizontal section through the walls at a corner, and shows the detail of the engagement of units 1, 1, 1, to form walls and their connection by the special corner unit 2, at the intersection of transverse and longitudinal walls. Fig. 9 is an enlarged section at X-X, fig. 3, and shows the roof units 1, 1, 1 in engagement with each other and with the special unit 2, to form a wall and roof connection. Fig. 10 shows units 4, 4 engaged with single-flange units 5, 5 to make a roof or other surface with the webs all in the same plane, and structures may be made up of surfaces composed of said units 4 and 5 in place of the units 1. The form of unit shown in fig. 7 may be used in conjunction with the units 5 in place of the units 4. The same or similar pieces are designated by the same reference numbers in all flanges. Figs. 1, 2, and 3 show a military weather-proof storehouse or soldiers' dwelling which, excepting the four corner-wall units 2, 2, and the two inclined end roof pieces 2, 2, is made entirely of standard units 1, with interlocked flanges, making continuous tight wall and roof surfaces. The units 1 consist, as in fig. 4, of a metal sheet provided at each side with double or U-shaped flanges 12, 12, such that the flange of one sheet interlocks with the flange of the adjacent sheet. The wall pieces 1 are rapidly and easily assembled together in vertical position and successively driven a short distance into the ground to secure them firmly and close the lower part of the structure. Some of said wall units 1 may be made shorter than the others, or may be driven deeper than adjacent ones of the same length to provide window openings 3, 3, and some may be entirely omitted at any desired place, to provide a door opening 6. The structure shown in figs. 1, 2, and 3 is also typical of shelters which may be made of great length to retain the sides of military trenches in battlefields, to exclude water, and protect the soldiers in the trenches. For this purpose the end wall shown in elevation in fig. 1 may or may not be omitted, and the side walls and roof may be made of any length and formed entirely of duplicate units 1. For a trench shelter the line B—B, figs. 1 and 2, represents the bottom of the trench, below which the wall units are driven a short distance to secure them and afford resistance for the exterior earth pressure, and the line A—A, figs. 1 and 2, represents the surface of the ground. Windows 3, in the front or highest wall, shown in elevation in fig. 2, are made wherever required to provide loop-holes for the soldiers to fire through. The roof has great strength to support a protective or masking cover of earth, logs, brush, &c., and is absolutely watertight. April 19, 1916.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., , Thanet House, Temple Bar, London.

No. 22,865. May 21, 1915.—R. C. Hall, 89 Parchmore Road, Thornton Heath, Surrey. Tap pipe coupling.

8,684. June 12, 1915.—Peter Fyfe, 23 Montrose Street, Glasgow. Pressure flushing tanks and valves for water-closets, slop sinks, and the like.

9,098. June 21, 1915. (Dated under International Convention, August 6, 1914.)—T. W. Clark, Lower Malvern Road, East Malvern, Victoria, Australia. Formation of concrete constructions.

9,697.—F. W. Dullingham, the Lion Hotel, Dulverton, Somerset. Shade carrying electric lamp holders.

10,295. July 15, 1915.—W. Grafton, Airlie, Monreith Road, Newlands, Glasgow. Gas taps, particularly for gas fires.

11,189. Feb. 3, 1916.—John Swainson, 6 Union Street, Glasgow. Grates, ranges, and the like.

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13,600. Sept. 24, 1915.—T. H. A. Brown, Power Station, Heidelberg, Transvaal. Electric lamp holders.

5,796. April 17, 1915.—F. W. Brackett and F. W. Brackett & Co., Ltd., Hythe Bridge Ironworks, Colchester. Devices for the mechanical purification or straining of river and like water.

5,849. April 19, 1915.—G. H. Dunlop, Chinderah, Tweed River, New South Wales. Excavating machinery.

100,257 (444, Jan. 11, 1916).—Adam Purves, 5 Market Street, Galashiels, Selkirkshire. Latches.

11,590. Aug. 11, 1915.—William Cramp and Julius Frith, Temple Chambers, 33 Brazennose Street, Manchester. Apparatus for conveying granular material, such as grain, cement, and the like by pneumatic means.

5,599. October 14, 1915.—W. H. Kenyon, 30 Deardengate, Haslingden, Lancs. Self-closing sliding door.

3,674. March 8, 1915.—F. W. Skinner, 41 Sherman Avenue, Richmond, N.Y. Sheet-metal buildings or structures.

10,294. July 15, 1915.—Walter Grafton, Airlie, Monreith Road, Newlands, Glasgow. Burners for gas fires.

13,497. September 22, 1915.—Nicolai Molotiloff, Utschitelski Institute, Tomsk, Russia. Detachable reinforced concrete flooring.

15,979. November 12, 1915.—C. N. Forrest, 175 Elm Avenue, Rahway, Union, New Jersey, U.S.A., and the Barber Asphalte Paving Co., Sand Title Building, Broad and Chestnut Streets, Philadelphia, U.S.A. Refining asphalte and manufacture of asphalte cements from natural asphaltes.

7,356. May 17, 1915.—H. S. Valentine, 91 Fotheringay Road, Maxwell Park, Glasgow. Gas water heaters.

3,458. March 4, 1915.—Thomas Jacks, 22 Clwyd Street, Ruthin, North Wales. Gas stoves, ovens, and the like.

10,385. July 16, 1915. (Dated under International Convention July 22, 1914.)—George Russell, 454 Flinders Street, Melbourne, Victoria, Australia. Means for adjustably securing metallic stirrup or shear members for reinforced-concrete construction.

1,433. Jan. 28, 1915.—Deutsch-Luxemburgische Bergwerks-unds Hutten-A. G., Bochum, Germany. Iron tongue-groove piling.

9,164. June 22, 1915.—Joseph Fletcher, "Brooklyn," 36 Osbaldeston, Stoke Newington, N. Valve for water taps.

9,870. July 7, 1915.—G. W. Naylor and J. F. Naylor, Denby Dale, near Huddersfield. Tanks for the purification of sewage.

10,442. July 19, 1915.—George Best, 121 Brooke Road, Stoke Newington, N. Manually operated implement for digging.

11,761. August 14, 1915.—The Parkinson Stove Co., Ltd., and William Cheshire, Stour Street, Spring Hill, Birmingham. Device for securing gas-fire radiants.

Any of the above specifications may be obtained from J. D. Roots & Co.

VARIETIES.

THE Cambrian Archæological Association, at their spring meeting in Shrewsbury, postponed until the end of the war the annual meeting to be held at Dolgelly.

MR. STANLEY BROADBENT, of Leicester, builder's merchant, who died recently, aged fifty, has left estate valued at £77,196.

THE Secretary of State has fixed the remuneration of the members of the Tribunal of Appeal under the London Building Act, 1894, to be the same as laid down in 1895—viz., for each member, three guineas for the first hour, and two guineas for each subsequent hour of each day's sitting of the Tribunal.

THE London County Council has decided to place at the disposal of the Education Committee, for exhibition in their schools, such of the pottery discovered during the excavations on the site of the old General Post Office and presented to the Council by the Postmaster-General, as is not suitable for exhibition in the Council's museums.

IT has been decided to let the contract for the conversion of Abernant House into a general hospital for the Aberdare district to Mr. H. Davies, builder and contractor, of Bargoed, at a sum of over £6,000. The work will, it is understood, be proceeded with forthwith. Mr. G. Kenshole, M.S.A., of Bargoed, is acting as architect.

WHILST dressing a large stone that had come out of the south wall of Selby Abbey when preparations were being made for the building of the new south transept, the Selby sculptor, Mr. T. Strudwick, recently came across a large cavity filled with lime. On the lime being removed Mr. Strudwick discovered a beautiful bit of Norman carving. It is surmised that it is part of the canopy of the abbot's throne.

THE Lord Provost's Committee of Edinburgh Town Council received a letter from the President of Group I. of the exhibition to be held in Paris in July with regard to reconstruction after the war of devastated cities, and asking the Corporation to send designs, photographs, sketches, &c. The Corporation sent a large collection to a town-planning exhibition held at Lyons, and it was agreed to recommend the Council that these exhibits should be sent to Paris.

AT the monthly meeting of the Board of Management of the King Edward VII. Hospital, Cardiff, recently, Colonel Bruce Vaughan expounded the scheme for extending the massage and electrical sections of the proposed new Orthopædic Department, and announced that the plans had been approved in every detail by Lieutenant-Colonel Robert Jones, the Inspector of Military Orthopædics. The Board referred the scheme to the Building Committee, with power to accept tenders.

THE Builders' Accident Insurance, Ltd., 31 & 32 Bedford Street, W.C., held their thirty-fifth annual general meeting on May 3, at the registered offices. The report states that the premium income during the year ending December 31, 1915, has been well maintained, but a falling off may reasonably be expected when the effect of the war on ordinary building operations has declared itself. The valuation of the investments as at December 31 shows a depreciation of £1,122 18*s.* 11*d.* The funds of the Association, after allowing for the above depreciation, stand at £29,146 11*s.* 11*d.*, as against £24,884 13*s.* 3*d.* at December 31, 1914.

THE new bridge over the Trent at Keadby is to be opened for traffic on May 22. On account of the war there will not be an opening ceremony. When the Great Central Railway began, in 1911, to widen their track over the Trent, the local authorities decided to join in the making of a bridge wide enough for highway traffic. The contract for a rolling lift bridge was given to Sir Wm. Arrol & Co., Glasgow, and the cost of construction has been about £150,000. The County Council contributed £20,000, the Brigg Rural Council £5,000, the Scunthorpe and Frodingham Council £2,500 each, and the smaller districts in proportion. The span weighs over 3,000 tons, and is raised by electricity in less than two minutes.

THE dispute between the Dublin Building Trades Employers' Association and the Amalgamated Society of Carpenters and Joiners and the Joint Union of Carpenters and Joiners, with regard to the conditions of service having been referred to Captain Fairbairn Downie, that officer has made his award, in which he provides that the present rate of wages paid by the employers, viz., 9*d.* per hour of fifty hours per week, be increased as from May 12 to 9¾*d.* per hour until June 27, and from that date the rate of wages shall be increased by a further ¼*d.* per hour to 10*d.* per hour. The award has received the approval of employers and men. A note appended to the award by Captain Downie recognises with pleasure that during the arbitration the representatives of the men offered to assist the Employers' Association in every way in their power to obtain an increase in prices, due to rises in wages, upon the contracts for the public offices in Merrion Street, the National University, Earlsfort Terrace, and the Labour Exchange, Lord Edward Street. The employers have gratefully accepted the offer.

THE Edinburgh Architectural Association paid their third summer visit to the new Royal (Dick) Veterinary College at Summerhall on Saturday afternoon. Mr. D. M'Arthy, Licentiate R.I.B.A., architect of the new buildings, exhibited the plans, and described the arrangements made to accommodate the different departments of the work of the College. The new buildings at Summerhall take the place of the obsolete buildings in Clyde Street. The site, which extends to 1½ acres, has a frontage of 250 feet, with a depth of 280 feet, was formerly occupied partly by the Summerhall Brewery, and partly by characteristic dwellings of a bygone age. The buildings are in two distinct sections. The front building is devoted to teaching and administration, and the back buildings form the clinical department. The main building contains laboratories, lecture theatres, hall seated for 300 persons, professors' rooms, and staff accommodation, also a large museum, photographic rooms, &c. The clinical department contains special wards for the treatment of horses, cows and sheep, and general wards for smaller animals.

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THE

Architect and Contract Reporter.

FRIDAY, MAY 26, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

**** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITION OPEN.

DUBLIN.—June 15.—The Senate of the National University of Ireland invites designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2s. deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

BRISTOL.—June 21.—For construction of foundations for No. 11 turbo-alternator at the Feeder Road generating station, St. Philip's, for the Electrical Committee. Deposit £2 2s. Mr. H. Faraday Proctor, M.I.C.E., M.I.E.E., chief engineer and general manager, Exchange, Corn Street, Bristol.

CASTLEFORD.—June 2.—For repairs (builder's work) and renovations (painting, colourwashing, &c.) of Council schools during August 1916, for the Castleford, Whitwood, Brotherton and Methley District Sub-Committee. Mr. W. E. Oxley, divisional clerk, Education Offices, Castleford.

EASINGWOLD.—May 31.—For the following work required in the erection of new dwelling-house, Uppleby, viz., bricklayer, mason, &c., slater, carpenter and joiner, plumber and glazier, and painter. Mr. J. F. Todd, architect and surveyor, Easingwold.

FINCHLEY.—May 29.—For annual repairs and painting of the Council schools, for the Urban District Council (Education Committee). The Secretary, Education Office, Church End, Finchley.

HALIFAX.—June 13.—The Education Committee of the Halifax Corporation invite tenders for (1) painting of sundry schools; (2) maple flooring; (3) pointing walls at Sunnyside Council school; and (4) extension of the heating apparatus at Portland Road Council school. Deposit £1 in each case. Mr. James Lord, M.I.C.E., borough engineer, Town Hall, Halifax.

HYTHE.—May 31.—For the construction of six bastions to sea wall, one flight of steps, four additional timber groynes, and extension of one existing groyne on or adjacent to the foreshore at Hythe, for the Corporation. Deposit £1. The Town Clerk, Hythe, Kent, or at the office of the consulting engineers, Messrs. Douglass, Lewis & Douglass, 15 Victoria Street, Westminster, London, S.W.

IRELAND.—May 29.—For reconstruction of corn and flour mills at Ballyhaise, for the Cavan Central Creameries and Agricultural Society, Ltd. Mr. P. J. Brady, J.P., architect, Broomfield House, Ballyhaise.

IRELAND.—For erection of a creamery at Cloghroe, Co. Cork, for the Newmarket Dairy Co., Ltd. Mr. W. L. Kelleher, C.E., architect, 53 South Mall, Cork.

MILNSBRIDGE.—June 5.—For adaptation of the Liberal club, Milnsbridge, for the purpose of a telephone exchange, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1s. The Postmaster, Huddersfield, and H.M. Office of Works, &c., Storey's Gate, S.W.

RAINHAM.—May 30.—For repair of the sea wall at Motley Hill Farm, in Bartlett and Otterham Creeks on the River Medway, for the Rochester and Chatham Joint Sewerage Board. Mr. W. Banks, A.M.I.C.E., Guildhall, Rochester.

RAMSBOTTOM (LANCS.).—June 6.—For erection of a new scullery at the Aitken Sanatorium, Holcombe, for the Bury and District Joint Hospital Board. Mr. F. Wild, clerk, Cross Street, Bury.

SEDBERGH.—May 30.—For making additions and improvements to the farm buildings at the Green and Moss Farms. Mr. J. Stalker, M.S.A., architect, Kendal.

STOCKPORT.—May 30.—For the conversion of offices at Adswood sidings into horsekeeper's apartments, for the Stockport Industrial and Equitable Co-operative Society, Ltd. Messrs. Wrathmell & Blackshaw, architects, St. Peter's Square, Southport.

SUNNINGHILL (BERKS).—June 3.—For carrying out proposed structural alterations to their cottage at Blacknest, Sunninghill, for the Windsor Rural District Council. Mr. J. E. Gale, clerk, 3 Sheet Street, Windsor.

WALES.—May 31.—For erection of an hotel at Cefn-y-van, Cymmer, Glynconwg. Mr. T. F. T. Jarvis, F.C.I.S., The Brewery, Pontypridd.

WALES.—June 5.—For adaptation and repairs to farm buildings at Cogan Hall Farm, Penarth, for the Glamorgan County Council. Mr. Thurston, Cogan Hall, and the Glamorgan County Hall, Cardiff.

WALES.—June 5.—For (1) erection of a police court, &c., at Pontypridd; (2) erection of a police court at Pontlottyn, for the Standing Joint Committee of the Glamorgan Quarter Sessions and County Council. The Glamorgan County Hall, Cardiff.

WIGAN.—May 31.—For supply, delivery and complete erection of extension to boiler house, including steel construction work, concrete foundations, brickwork, joinery, plumbing and slating, for the Electricity Committee. The Electrical Engineer's Office, Wigan.

TENDERS.

FARNBOROUGH.

For the erection of thirty small houses in Fellows Road, Farnborough, Hants, for the Farnborough (Hants) Housing Syndicate. Mr. A. H. DUNGAY, M.S.A., architect, Farnborough, Hants.

Smith & Sons	£22,590	0	0
Myall Bros.	16,950	0	0
Dunthorn	16,590	0	0
Watson	16,392	0	0
Sherfield Bros.	16,092	0	0
J. B. Seward, Ltd.	15,645	0	0
Crosby & Co.	15,540	0	0
*O. P. DREVER & SON, LTD., Kettering	14,100	0	0

* Revised and accepted.

MR. ROBERT ANDERSON, J.P., head of the Glasgow firm of Messrs. J. & R. Anderson, painters and decorators, died on Monday last in his seventieth year. As a member of the Glasgow Town Council, he acted for some years as convener of the committee dealing with sewage disposal. As a business man he was for a time President of the Glasgow Master Painters' Association, and he was also a former President of the National Association of Master Painters of Scotland.

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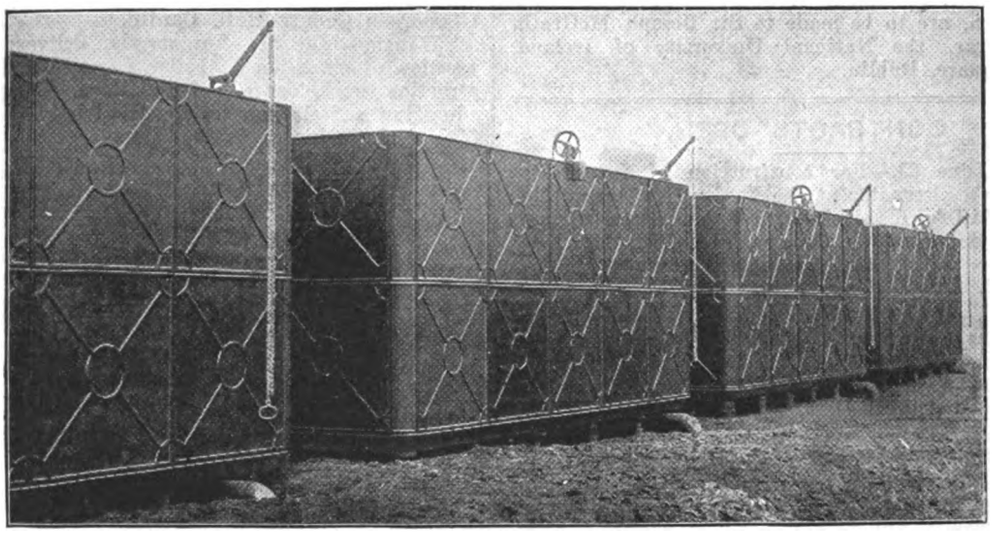
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LONDON ASSOCIATION OF MASTER DECORATORS.

A QUARTERLY general meeting of the London Association of Master Decorators was held at the Holborn Restaurant on Wednesday, April 26, Mr. Mawer Cowtan Cowtan, President, occupying the chair.

Improver's Indenture.—The first business was the consideration of the Improver's Indenture, which had been drawn up for the convenience of members who desired to employ youths who had attended three years at the Brixton School of Building. After some discussion and amendment, the following form of indenture was unanimously approved:—

This Indenture made the
day of One thousand nine
hundred and BETWEEN
hereinafter called the Improver son of
of the first part the said
of the second

part and

hereinafter called the Employer of the third part WITNESSETH as follows:—

1. The said Improver of his own free will and with the approbation of the said
(testified by his executing these presents) doth engage himself Improver to the Employer to learn the art trade or business of a Painter and Decorator as now carried on by the Employer, and will well and truly serve the Employer after the manner of an Improver from the day of , one thousand nine hundred and , for the full term of three years from the aforesaid date.

2. During the said term the Improver shall faithfully serve the Employer and keep his secrets and lawful commands. He shall do no damage to the Employer or his goods nor suffer it to be done by others but shall forthwith give notice to the Employer of the same. He shall not waste or lend the said goods or unlawfully or knowingly do any act whereby the Employer may sustain any loss.

3. Without the consent of the Employer he shall not buy or sell goods or absent himself from the Employers service but in all things as a faithful Improver shall behave himself towards the Employer and others having authority over him during the said term.

4. The Improver shall not on the termination of his service hereunder whether by effluxion of time or otherwise set up in a similar business within a distance of three miles or engage himself to an Employer or Employers in a similar business within the aforesaid limits for a period of twelve months without the consent of the Employer first had and obtained.

5. In consideration of the foregoing the Employer hereby covenants with the Improver and the said
(the party hereto of the second part) that he, the said Employer, will take and receive the said Improver during the term and by the best means in his power shall teach and instruct or cause to be taught and instructed the Improver in the art trade or business as aforesaid and incidental or relating thereto and also will pay his wages weekly at the following rates, namely: during the first year of the said term at the rate of Threepence per hour for every hour that he shall have been engaged on work for the Employer during the week: during the second year of the said term at the rate of Fourpence halfpenny per hour as aforesaid: during the third year of the said term at the rate of Sixpence per hour as aforesaid. The aforesaid hourly wage shall be paid only for the actual time the Improver shall have been at work.

6. The Improver shall attend Evening Technical Classes for instruction as reasonably required by the Employer.

7. The Improver covenants with the Employer that the covenants on the part of the Improver hereinbefore contained shall be duly performed and observed.

8. In the event of breach non-performance or non-observance of this Agreement or any part thereof by either party and if the matters in dispute cannot be amicably arranged between the parties with the assistance of the President of the London Association of Master Decorators it shall be referred to an Arbitrator to be appointed by the Council of the said Association, whose decision shall be final and binding on all parties.

In witness &c.
Signed sealed and delivered
by
in the presence of
Signed sealed and delivered
by
in the presence of

Wallpaper Discounts.—The question of wallpaper discounts was then considered and a report made as to the conference between the representatives of the Wallpaper Manufacturers, Merchants, and Decorators.

Mr. Anderson said that they had not been successful in persuading the representatives to restore the discount to the original figure; this was largely due to the decorators' apathy in the past. It was pointed out that the Master Builders' Association were very keen on this subject and would render any assistance they could. The manufacturers and merchants had stated distinctly that it was only the intention to try the 25 per cent. discount for one year. An outside firm had agreed to supply wallpapers at the usual discount, but their plant under present conditions was not ready to produce the goods, although it might be later.

Mr. F. Dakin then moved the following resolution, which was carried unanimously:—

"That a formal protest on the action of the Manufacturers' and Merchants' Associations of Wallpapers be entered on the minutes and be sent to them."

It was further resolved that "the Association agrees to take up the matter with kindred Associations at a later date, with a view to protecting their interests."

Co-operative Societies.—The following resolution respecting the fees and taxes paid by the co-operative societies was moved by Mr. C. E. Wilkinson, seconded by Mr. White, and carried unanimously:—

"That Co-operative Societies registered under the Industrial and Provident Societies' Act should be registered under the Companies' Acts and pay the same fees and taxes and observe the same provisions as other limited liability companies."

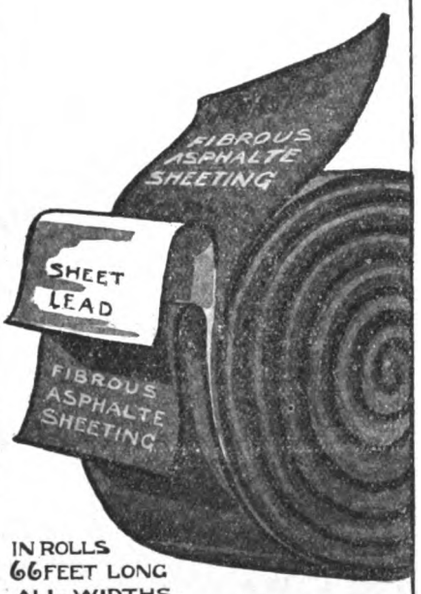
Schedule of Prices.—The next business was to consider the schedule of prices issued by the Association some time since, and to decide as to the advance which should be made during the period of the war. Mr. Cowtan pointed out that inasmuch as the prices of materials fluctuated day by day, that the price list must be regarded as being suspended for the time being. He said that in his establishment instructions had been given that no estimates at all were to be sent out without reference to the heads of the firm. It was agreed that the price list be regarded as being suspended for the time being.

The Propaganda Committee.—Mr. A. Seymour Jennings then reported that at the last meeting of the Executive Committee a Propaganda Committee was appointed to take steps immediately to endeavour to form local Associations of Master Decorators and the allied trades in the suburbs of London.

Two districts were selected experimentally—viz., Lewisham and Croydon. Circulars in facsimile typewriting with the names and addresses typed in, to suggest a personal letter, were sent to all builders and decorators within the districts named, with accompanying circular headed "A Few Facts," and later a postcard as a reminder of the date of the meeting. On March 30 the first meeting was held at Limes Hall, Limes Grove, Lewisham, when about fifty decorators attended. Mr. J. Anderson took the chair, and some

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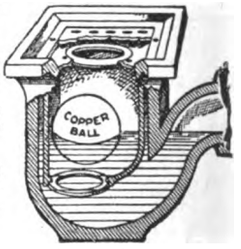
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stirring speeches were made by some of the members of the committee, as well as by Mr. Thomas Foster, Treasurer of the National, Mr. J. H. McDermid, and other gentlemen. A resolution was unanimously adopted that the association be formed. A week later a meeting was held, when Mr. F. W. Loasby, of Hither Green Lane, was elected Chairman, Mr. James Laird, Junior, Secretary, and Mr. J. R. Roberts, Treasurer. It was agreed that the subscription should be 12*s.* 6*d.* per annum, including 2*s.* 6*d.* affiliation fee to the London Association of Master Decorators, and it was also agreed that the title should be "The Lewisham and District Association of Master Painters and Decorators and Allied Craftsmen."

On March 31 a meeting was held at Croydon which was also eminently successful. A threatened Zeppelin raid, however, brought the meeting to a somewhat abrupt conclusion, but not until after a resolution had been passed that an association for Croydon and the district be formed.

Subsequently a meeting was held, but only about nine decorators attended, probably owing to the fact that they were not all notified by the local secretary, as was the case at Lewisham. The feeling evinced, however, was quite favourable, and there is no doubt that such an association will be formed.

The Committee came to the opinion that the success met with in the two places named warrants their proceeding to take in the whole of the London district in the same manner.

Mr. A. S. Jennings moved that the Propaganda Committee should proceed with the formation of local associations in the suburbs of London on the same plan as that adopted at Lewisham and Croydon. This was agreed to.

Students at the Brixton School.—The subject of students in the L.C.C. School of Building at Brixton was then considered, and it was explained that of the eleven boys who had served three years there were seven or eight still available. Mr. Dakin suggested that a card should be sent to all members asking whether they would take the boys so that all should have an equal chance of employing them should they so desire. He also mentioned that it was understood that each employer would contribute £1 1*s.* to the prize fund on a boy entering his employment.

The Secretary gave a statement of accounts, and it was agreed to call a meeting of the Finance Committee at an early date to consider the expenses involved in the propaganda work.

AMERICAN INDUSTRIAL RESEARCH.

IN the course of an address on "The Industrial Outlook and Its Relation to the Gas Industry," delivered at the eleventh annual meeting of the Society of British Gas Industries, Mr. Horace Moore Thornton, J.P., the chairman of the Council, referred to the interesting and profitable scheme of industrial research scholarships now in operation in the Universities of Pittsburg and Kansas. He said:—

"Men who have graduated with distinction and exhibited capacity for original research are nominated by the University as Research Fellows. Manufacturers who are concerned with scientific processes are invited to state, in strict confidence and in detail, to the University certain particular scientific difficulties or problems in their work which they wish solved. They then enter into a contract with the University to pay for a defined time the stipend of a Research Fellow and certain fees, and to give a bonus or royalty to the investigator if the problem is satisfactorily solved. The Fellow, on his part, binds himself by contract to secrecy, undertakes to apply for patents, if required, on behalf of his employers, and enters into certain other covenants. In this manner, the interests of all parties are united.

"The manufacturer has placed at his command the resources of university laboratories and libraries; and his expenditure is strictly limited. The investigator has an inducement to do his best, and a stimulus to diligence and preservation of reputation. The University is benefited, and in many cases, as an indirect outcome of the solution of commercial problems, valuable contributions to pure scientific knowledge are obtained. The Research Fellows gradually gain experience in industrial research, which makes their work progressively valuable."

It is to be hoped that the British Empire will be wise enough to learn from a country which will undoubtedly be her most formidable industrial rival in the future, for in this respect we must undoubtedly look not only to the east but to the west.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 8,684. June 12, 1915.—Pressure Flushing Tanks and Valves for Water-closets, Slop Sinks, and the like. Peter Fyfe, 23 Montrose Street, Glasgow, Chief Sanitary Inspector.—This invention relates to apparatus for flushing water-closets, slop sinks, urinals, and the like, of the kind in which the air pressure within a closed tank in communication with a source of water supply is utilised for the purpose of cutting off automatically the supply of water immediately the tank contains the pre-determined quantity of water to be employed for flushing purposes. The apparatus is so constructed that the flush of water is effected through a flushing valve secured preferably to the top water-holder, which flushing valve also serves to control automatically the action of the water-inlet valve. A pre-determined quantity of water is stored under pressure in the tank, independently of the pressure in the water main, by means of an adjustable weight or handle attached to or connected with a piston which acts as a counterpoise until the desired pressure within the tank has been attained and the resistance of the weight is overcome, whereupon the upward movement of the piston permits the pressure in the supply pipe to close automatically the water-inlet valve. To flush the water-closet or the like, the weighted lever is raised by hand, thus allowing the piston-valve to be pushed

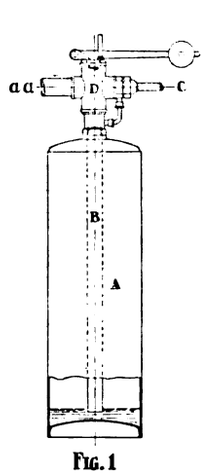


FIG. 1

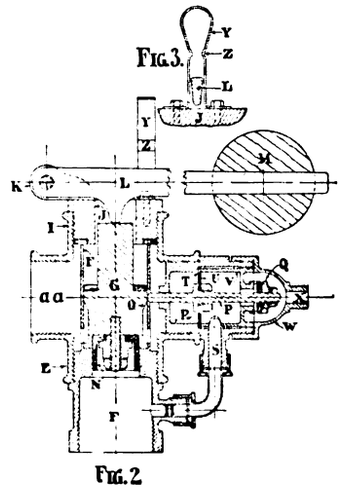


FIG. 2

FIG. 3.

up by the pressure of the trapped air within the receptacle acting on the contained water. When the bucket at the lower end of the piston-valve is raised clear of the valve seat the water escapes and flushes the water-closet or the like. To reset the apparatus, the weighted lever is released so that the piston-valve or plunger descends and again assumes its normal position within the upper end of the depending pipe. Fig. 1 is an outside elevation of the apparatus. Fig. 2 is a cross-sectional elevation of the upper part of the apparatus (the receptacle being omitted). Fig. 3 is a front elevation of the kneed guide shown in section in fig. 2. A pipe B is depended to within an inch from the bottom of the receptacle or water-holder A (fig. 1). The water from the house main pipe C passes through the valve D into this down pipe, and rises into the receptacle or water holder, compressing the imprisoned air as it descends, and thus forming a cushion of compressed air which, when the

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valve D is opened for flushing through the valve outlet *a a*, acts as a propelling agent which forces the water upwards through the valve into the water-closet or sink. Into the lower vertical branch E, fig. 2, a circular tube F is screwed, its bottom part being threaded to form a connection with the pipe within the water holder, and its top part being ported and extending upwardly within the body of the valve to approximately the top of the horizontal branches so as to form a guide for the piston-valve or plunger G within the valve body. A small branch H is cast on the side of the tube F at its lower end, which acts as an inlet for a fresh supply of water to the water-holder. Into the top part I a metal plug J is screwed, having on one side two lugs K, to which is connected the actuating weighted lever or handle L which controls the water pressure desired in the water-holder, and forms the means of opening the piston-valve or plunger G when a flush is required. The lever rests upon the top of the piston-valve G, and the ball M or weighted handle upon the end of it is adjusted to act as counterpoise to the pressure exerted upon the bucket M which is fixed to the bottom of the piston-valve within the tube F. The central part of the piston-valve is bevelled or tapered as shown at O. When, after a flush has taken place, the piston-valve is down upon its seat, the surface of this valve at its greatest diameter presses upon the end of a horizontal pin or spindle P. This keeps the small water inlet valve Q open for the admission of water to the water-holder, and when the desired pressure has been attained it lifts the piston-valve or plunger against the weighted lever or handle until the inner end of the spindle is opposite the bottom of the taper, when the water pressure in the main pipe closes the small inlet valve Q. This spindle operates in a casing R. Upon the side of this casing a branch S is cast connected to the similar branch H at the bottom of the tube F screwed into the valve body D at the bottom. Against the shoulder T a diaphragm U of insertion packing is fitted and held by a metal ring V, upon the outer end of which the valve seat is formed, upon which the water-inlet valve Q operates to open and close connection with the water supply pipe. April 29, 1916.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 6,329. April 28, 1915.—Alfred Smallwood, 42 Hargrave Park, Highgate, N. Means for grinding or disintegrating cement or other material.

6,590. May 3, 1915.—Arthur Edwards, Broadoak Lodge, Rossett, near Wrexham. Casements.

6,610. May 3, 1915.—Marc Schopfer, 85 Boulevard Carl Vogt, Geneva, Switzerland. Building blocks.

12,429. Aug. 30, 1915.—John Vaughan, 247 Wyggeston Street, Burton-on-Trent. Domestic fire grates.

12,805. Sept. 7, 1915.—F. A. Stiers, 4171 West Belle Place, St. Louis, Miss., U.S.A. Valves for street sprinklers.

13,479. Sept. 22, 1915.—W. S. Thomson, Plantsville, Hartford, Conn., U.S.A. Gas pliers.

13,748. Sept. 27, 1915.—Chas. Brent, 28 Orton Place, Buffalo, N.Y., U.S.A. Fire extinguishing apparatus.

15,121. Oct. 26, 1915.—Cornelius Hickey, Clifton Terrace, Kilkee, Clare, Ireland. Liquid fuel stoves.

100,087. (No. 2,170, Feb. 14, 1916, dated under International Convention Feb. 15, 1915.)—K. E. Bergstrom, Scheelegatan 22, Stockholm. Wheeled fire escapes adapted to be mounted on motor or other vehicles.

Any of the above specifications may be obtained from J. D. Roots & Co.

AT the recent annual meeting of the Chelmsford Cathedral Chapter an interesting announcement was made respecting the seventh century church of St. Peter-ad-Murum at Bradwell-on-Sea. This will, through the generosity of the Parker family, be conveyed to a trust, consisting of diocesan officials and representatives of the Parker family, so that it may be preserved to the diocese for its former sacred use. Latterly the building has been used as a barn. An excellent report regarding the structure has been made by Mr. C. R. Peers, F.S.A., Chief Inspector of Ancient Monuments, and a scheme for the restoration of the fabric has been prepared. The work will not be undertaken until after the war.

VARIETIES.

TWENTY factories are to be erected at Tottenham. This activity is said to be due to the new war on German trade.

WOUNDED and disabled men, able to perform light work, are being substituted at the Skinningrove (Yorks) Ironworks for men of military age.

MR. J. W. WHITE, builder and contractor, of Sunderland, has been co-opted a member of the Sunderland Town Council.

THE well-known stair tread, the Andrews-Hawksley patent, has been acquired by Messrs. Hughes, Bolckow & Co., Ltd., of Battleship Wharf, Blyth, where in future the business will be carried on.

ARTHUR ELLIS, thirty-three, who prior to joining the Royal Fusiliers a week ago was a master builder, living at Seven Sisters Road, London, dropped dead at Dover, and at the inquest on Tuesday last death was shown to be due to heart failure.

NEW ZEALAND has recently established a record even for that energetic country in having built and set going within six months a freezing works which at once had a capacity for dealing with 1,500 sheep daily, and will have an ultimate full capacity of 4,000.

THE Doncaster Rural District Council on Saturday had before them a proposal of the Bullcroft Colliery Co. to erect 300 houses in the parish of Owston upon the plan approved for the erection of the Armthorpe Colliery village. It was resolved that provision be made for including the plan in the town planning scheme.

MR. JAMES GILLESPIE, of Queen Street, St. Andrews, a member of the firm of Messrs. James Gillespie & Scott, architects and surveyors, and agent for the Lancashire Insurance Company (in which his interest has been valued for probate at £4,500), left, in addition to real estate of considerable value, personal estate valued at £11,239.

THE question of the responsibility for the rebuilding of churches which might suffer from aircraft or other bombardment was before the Treasurer's Committee of Edinburgh Town Council last week. A letter was read from the Ecclesiastical Commissioners suggesting that the Corporation should pay the anti-aircraft insurance on the churches, or assist in the payment of it. The repair and maintenance of the fabric, it was pointed out, was the duty of the Ecclesiastical Commissioners, and the committee agreed that the Corporation should take no action in the matter.

FOR two and a half days four Lords of Appeal in Ordinary sat in the House of Lords to consider whether there was any right of action in a dispute about the erection of a hoarding consisting of an old packing-case in a Skipton cottage garden which shut out the light from a window in an adjoining farmhouse. The farmer's people tore the hoarding down, but it was re-erected, and subsequently, before the action for an injunction came on, the owner of the cottage, a lady, ordered the removal of the hoarding. Costs were awarded against her by Mr. Justice Sargant, and the Court of Appeal upheld the decision. In the House of Lords, where each side was represented by a K.C. and a junior, the decision last week was again against the lady. Viscount Haldane said the litigation was deplorable, and the costs of it would possibly swallow up the value of both properties.

THE Institute of Plumbers held their tenth annual meeting in the Ilkley Town Hall last week. Mr. T. E. Hill, of Birmingham, president, occupied the chair, and the large number of members present were welcomed by Councillor William Prest, A.M.I.C.E., chairman of the Ilkley District Council. The balance-sheet showed the finances of the Institute to be satisfactory. Mr. John Allinson, of Gateshead-on-Tyne, who was elected president for the ensuing year, said the plumbing trade, like other trades, had been passing through a trying time owing to the war. It had not been recognised as a reserved trade, but he thought there should be some check upon recruiting from their ranks. It was a highly specialised trade, which did not lend itself to dilution either by unskilled labour or by women. Reference was made to a case in which a large controlled firm had advertised for plumbers at wages higher than the established rate for the district. The Institute had moved in the matter, with the result that the Minister of Munitions now inserted a clause in all contracts that a higher rate of wages than the standard of the district must not be offered or paid without obtaining the sanction of the Department. The vice-presidents elected were Messrs. James Wild (Rochdale), E. K. Lawson (Hull), and H. A. Ward (Sheffield).

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THE

Architect and Contract Reporter.

FRIDAY, JUNE 2, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITION OPEN.

DUBLIN.—June 15.—The Senate of the National University of Ireland invites designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2*s*. deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

BRISTOL.—June 21.—For construction of foundations for No. 11 turbo-alternator at the Feeder Road generating station, St. Philip's, for the Electrical Committee. Deposit £2 2*s*. Mr. H. Faraday Proctor, M.I.C.E., M.I.E.E., chief engineer and general manager, Exchange, Corn Street, Bristol.

CLITHEROE.—June 3.—For cement rough casting, papering and painting, &c., at the house at the sewage farm. Mr. A. R. Bleazard, borough surveyor, Clitheroe.

GILDERSOME (YORKS).—June 10.—For masons', concretors', joiners', plumbers', plasterers', slaters', and iron-founders' work in rebuilding Maiden Mill, for Messrs. A. & A. Brooke. Mr. T. A. Buttery, Licentiate R.I.B.A., architect and surveyor, Queen Street, Morley, and 1 Basinghall Square, Leeds.

HALIFAX.—June 13.—The Education Committee of the Halifax Corporation invite tenders for (1) painting of sundry schools; (2) maple flooring; (3) pointing walls at Sunnyside Council school; and (4) extension of the heating apparatus at Portland Road Council school. Deposit £1 in each case. Mr. James Lord, M.I.C.E., borough engineer, Town Hall, Halifax.

HARWICH.—July 10.—For the design and construction of a refuse destructor, for the Corporation. Deposit £1 1*s*. Mr. F. H. French, borough surveyor, Harwich.

HENGRAVE.—June 14.—For the demolition of the existing portions of bridge, the removal of the debris, and the erection of a new structure at Waste Water Bridge, Hengrave, for the West Suffolk County Council, as follows: (Contract No. 1) Construction of abutments, wing walls, &c., in concrete and brickwork; (2) floor constructed of steel trough decking. Deposit £2 2*s*. each contract. Mr. W. L. Jenkins, A.M.I.C.E., county surveyor, Shire Hall, Bury St. Edmunds.

IRELAND.—June 4.—For additions to the Rectory, Durrow, Tullamore. Rev. S. de Courcy Williams, Durrow Rectory, Tullamore.

IRELAND.—June 7.—For erection of a wing to the Presentation Convent, Mullingar. Deposit £1 1*s*. Mr. A. B. Bruntz, quantity surveyor, 1 Charlemont Terrace, Kingstown, or Messrs. W. H. Byrne & Son, architects, 20 Suffolk Street, Dublin.

LUDDENDENFOOT.—June 7.—For rebuilding mill, Luddendenfoot, S.O. Messrs. Joseph W. Whitworth, Ltd., Luddendenfoot, S.O., Yorkshire.

MANCHESTER.—June 5.—For plumbers' work and decorators' work at the reference library annexe, Piccadilly, for the Libraries Committee. Deposit 10*s*. 6*d*. The City Architect, Town Hall, Manchester.

MILNSBRIDGE.—June 5.—For adaptation of the Liberal club, Milnsbridge, for the purpose of a telephone exchange, for the Commissioners of H.M. Works and Public Buildings. Deposit £1 1*s*. The Postmaster, Huddersfield, and H.M. Office of Works, &c., Storey's Gate, S.W.

PENDLETON.—June 13.—For relaying concrete and tile floors at the Hope Infirmary, Pendleton, for the Salford Board of Guardians. Mr. E. H. Inchley, clerk, Poor-Law Offices, Eccles New Road, Salford.

RAMSBOTTOM (LANCS.).—June 6.—For erection of a new scullery at the Aitken Sanatorium, Holcombe, for the Bury and District Joint Hospital Board. Mr. F. Wild, clerk, Cross Street, Bury.

STANLEY.—June 6.—For extending brick culvert at Hustle Down, for the Stanley Urban District Council. The Durham Surveyor's Office, Stanley.

SUNNINGHILL (BERKS).—June 3.—For carrying out proposed structural alterations to their cottage at Blacknest, Sunninghill, for the Windsor Rural District Council. Mr. J. E. Gale, clerk, 3 Sheet Street, Windsor.

THATCHAM.—June 12.—For constructing and extending concrete walling in the Northfield Road and Stoney Lane, Thatcham, for the Newbury Rural District Council. Mr. W. Church, surveyor, Newtown Road, Newbury.

VARTEG.—June 10.—For repair and renovation of the Wesley Hall and classrooms. Mr. C. H. Badman, Salisbury House, Varteg, Mon.

WALES.—June 5.—For adaptation and repairs to farm buildings at Cogan Hall Farm, Penarth, for the Glamorgan County Council. Mr. Thurston, Cogan Hall, and the Glamorgan County Hall, Cardiff.

WALES.—June 5.—For (1) erection of a police court, &c., at Pontypridd; (2) erection of a police court at Pontlottyn, for the Standing Joint Committee of the Glamorgan Quarter Sessions and County Council. The Glamorgan County Hall, Cardiff.

WALES.—June 7.—For erection of a fence wall on the Bridgend and Port Talbot main road, near Pentwyn Farm, Baglan. Police Station, Port Talbot, or the Glamorgan County Hall, Cardiff.

WALES.—June 13.—For the following works, viz., painting district police stations, painting cab shelters, stripping and reslating main roof of the Cathays police station, for the Cardiff Corporation. The Office of the City Engineer, City Hall, Cardiff.

TENDERS.

IRELAND.

For erection of new premises for the "Anglo-Celt" Printing Works, Cavan. Mr. P. J. BRADY, architect, Ballyhaise, Cavan.

F. Prior, Ballinamore, Co. Leitrim . .	£795 0 0

Seven other tenders were received.

LEAVESDEN.

For cleaning and painting works and repairs at the Leavesden Asylum, Herts, for the Metropolitan Asylums Board.

A. Vigor, Ltd.	£560 0 0
Payne Bros.	173 0 0
Clifford & Gough	157 0 0
A. H. INNS, 7 Devonshire Square, Bishopsgate, E.C. (*recommended*) . . .	137 0 0

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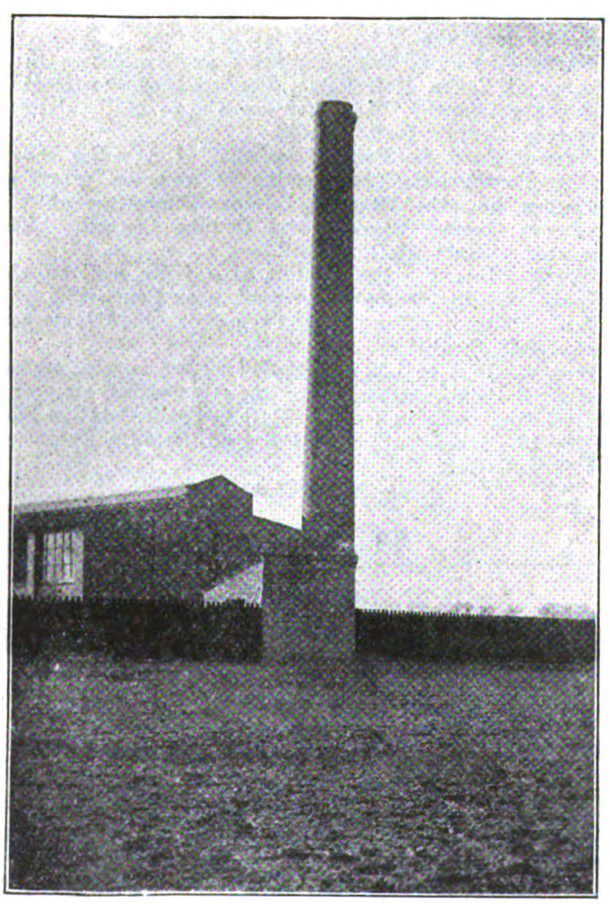
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LONDON.

For reconstructing after fire 113 Fleet Street, London, E.C., for Mr. F. Gillett. Mr. EUGENE C. BEAUMONT, M.S.A., architect, 78 Fleet Street, E.C.

Bruce, Ltd.	£992	0	0
Kinninmont & Sons	985	3	9
W. Downs, Ltd.	957	0	0
Crossley & Sons	765	0	0
Woodhams & Sons	675	0	0

For cleaning and painting works and repairs at the North-Western Hospital, for the Metropolitan Asylums Board.

Fenwick & Co.	£1,297	0	0
Myall Bros.	1,176	0	0
Small & Sons	1,120	0	0
Courtney & Fairbairn	985	0	0
Inns	977	0	0
Bidwell & Co.	928	0	0
Boyd & Son	881	0	0
L. Kazak, Railway Place, Belvedere (*recommended*)	835	0	0

Engineer-in-chief's revised estimate, £800.

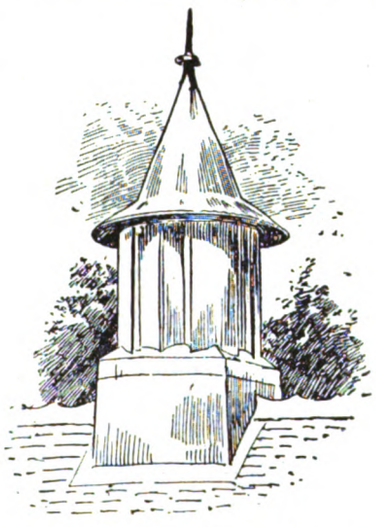
WEST LOOE.

For the renewal of the roof of St. Nicholas Church, West Looe, Cornwall. Messrs. SEDDING & STALLY-BRASS, architects, Plymouth.

Hambly	£171	10	0
WM. TAYLOR, Westwood (*accepted*)	165	10	0

BOYLE'S LATEST "AIR-PUMP" VENTILATOR

THE fact that Robert Boyle & Son, of London and Glasgow, the ventilating engineers, have just launched into the market a new type of their "Air-pump" Ventilator shows, in our opinion, a most admirable spirit of confidence and energy, which redounds greatly to their credit. The present moment may not be the most favourable moment in which to make quick sales for every new line of goods. But it does appear a fine opportunity to improve long-accepted methods and, as it were, to regild golden reputations. Years ago the world of science awarded its first prizes and highest praises to Robert Boyle's ventilators. For example, Lord Kelvin, after seeing several different forms of them in operation, wrote "testifying to their efficiency." And the founder of the Royal Sanitary Institute more boldly declared, "since these excellent ventilators have been introduced we have now got a perfect method of ventilation." The firm have regarded all this success as a reason to strive for further progress. From time



to time new improvements have been achieved and patented. The latest we show here. This "Air-pump" Ventilator has been found to be a great improvement on their previous patents, being not only a more powerful exhaust but absolutely free from down-draught and weather-proof under all conditions. The ventilators are made of the best quality cold-rolled close-annealed steel plates, galvanised and painted, the workmanship being of the highest class, securing the maximum of efficiency with that of durability, the extracting power being double that of earlier forms of the "Air-pump" Ventilator.

The prices of the different designs are also moderate and to suit all classes of buildings, so that there need now be no further excuse for defective ventilation on the score of cost.

The latest design of No. 175, a block of which we give, now supersedes design No. 175 as illustrated in the firm's catalogue, and also 175B.

Other special designs of the latest patent have also been introduced in connection with war buildings of every description, and many thousands of these have been used for this purpose in this country and also by the Allied Governments.

The prices of these special-design ventilators have been made very low in consideration of the character of the buildings for which they are intended, though they are equally as effective and of the same high quality of material and workmanship as the more ornamental forms of the "Air-pump" Ventilator.

BRITISH PATENT SPECIFICATION.

No. 7,306. May 15, 1915.—Improvements in Concrete Fence and like Posts. Frederick Lowry, architect, of 24 Broadway, Leigh-on-Sea.—This invention relates to concrete posts of reinforced type for use in building construction and in concrete fences, having for its object greater economy and efficiency. The post is made in two portions, the lower part

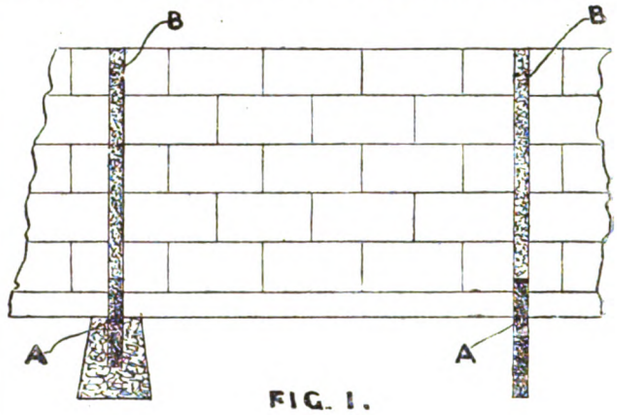


FIG. 1.

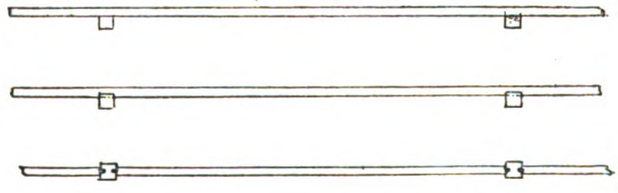


FIG. 2.

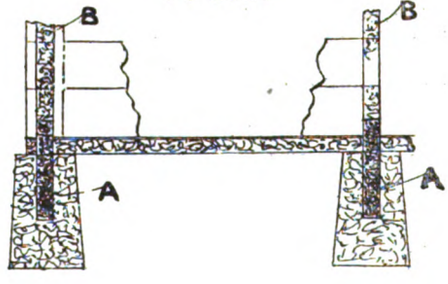


FIG. 3.

being waterproof and of specially selected material for insertion in the ground, whilst the other or upper section is of lighter material. The lower or ground portion is preferably made of any heavy material, such as gravel, broken stones, and sand with cement, dense enough to be made waterproof in order to prevent dampness arising into the upper portion. The said upper part is composed of coke breeze, clinker

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breeze, pumice or other light material, and cement of such a density that nails can be easily driven into same. The upper part can be treated with cement plastering. This post can be produced cheaply, whilst it is easy to work with and weatherproof. It may be made of any length, section or shape, and have cast integrally therewith attachments or fittings of any construction or design. Fig. 1 is a section of two fence posts shown in relation to a portion of a wall. Fig. 2 are alternative plans of same. Fig. 3 are enlarged details. The post consists primarily of two portions A or B, one (A) being the lower section and the other (B) the upper. The lower section is, of course, that inserted in the ground, and must therefore be made of heavy material, such as gravel, broken stone, and sand or the like, mixed with cement dense enough to be waterproof. The upper portion (B) is of lighter substance, such as coke breeze, clinker breeze, pumice or other light material, with cement as a binding material, said cement being of such a density as to permit of nails being easily driven into same. The upper part can, of course, be treated or coated with plaster or like material for purposes of a finish before or after fixing. A post made according to this invention can, by cement rendering, be made waterproof throughout. May 10, 1916.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

VARIETIES.

EXTENSIVE damage was caused by fire at the premises of the Pearson Electric Co., Marshgate Lane, Stratford, E., on Wednesday last.

LAST week a disastrous fire broke out at the Corunna Works of Messrs. Holliday & Greenwood, building contractors, Nine Elms, resulting in damage estimated at £50,000.

THE Birmingham Estates Committee invite applications before June 6 for the position of architect and surveyor at a commencing salary of £180 a year. Applicants must be ineligible for military service.

THE official opening of the first of the new houses at Rosyth took place on the 25th ult. in presence of a large gathering. Mr. Findlay, chairman of the Scottish National Housing Co., Ltd., said that within the next year houses to the number of 600 would be ready. In addition arrangements were being made for the erection of another 450. Mr. A. Greig, a member of the firm of architects, Messrs. Greig, Fairbairn & Macniven, presented Mrs. Findlay with a gold key.

AT Cambridge University to-day (Friday) a Grace is to be offered to the Senate to admit women students to the examinations for the first and second M.B. and to the examinations in architectural studies. A circular bearing the signatures of Professor Ridgeway and the Masters of Pembroke and Jesus Colleges protests against the Senate's being asked to vote on so important a matter without information or debate, especially at a time when so many members of the Senate are away on national service.

AT the last meeting of the Gloucestershire Education Committee the Chairman stated that, following the example of the Chairman of the County Council in voluntarily undertaking to act as chief constable, and of Sir Ashton Lister in undertaking to act as county surveyor, during the absence on active service of Col. Chester Master and Col. Sinnott respectively, the Rev. Canon Sewell, chairman of the Works Sub-Committee, had offered to carry on the work of the committee's architect and surveyor (Mr. R. S. Phillips) whilst he was at the front.

MR. WILLIAM LEIPER, F.S.A., F.R.I.B.A., died on Saturday, the 27th ult., at his residence, Helensburgh, after an illness of a few hours' duration. Mr. Leiper, who was seventy-six years of age, was a native of Glasgow, and became a pupil of the firm of Messrs. Bouchier & Cousland, architects in that city, and afterwards he was with Mr. William White, F.S.A., and Mr. J. L. Pearson, R.A. He designed Dowanhill, Camphill, and Hyndland Churches, Dumbarton and Partick Municipal Buildings, and many mansion-houses throughout the country. Over thirty years ago he was the designer of the decorations of the Russian Imperial yacht Livadia, and more recently the decorations of the Banqueting Hall of Glasgow Municipal Buildings.

THE total value of slate of all kinds sold in the United States in 1915 was $4,958,515, according to the United States Geological Survey. This was a decrease of 13 per cent. compared with 1914. The sales of roofing slate in 1915 were 967,780 squares, valued at $3,745,934, and of mill stock 4,576,112 square feet, valued at $819,672. Blackboard material and school slates decreased nearly 31 per cent. Several producers have reported to the Geological Survey that during the last three months of the year conditions began to improve and that early in 1916 prices for slate of all kinds were more encouraging than at corresponding times for several years. At present many of the quarries can greatly increase their output to keep pace with any increase in demand.

THE annual general meeting of the Institution of Civil Engineers of Ireland was held on May 29 at the Meeting Hall, 35 Dawson Street, Dublin. Mr. Mark Ruddle, president, occupied the chair. Mr. Gillman, J.P., the secretary, submitted the report of the Council and the statement of accounts, from which it appeared that during the year, owing to the abnormal conditions caused by the war, there was very little work going on, except that of maintenance, and what was connected with military affairs. A large number of members had joined the Army. The membership had increased during the year, and the financial position was regarded as satisfactory. The report and statement of accounts were unanimously adopted. The following officers and members of the Council were elected: President, Mr. Mark Ruddle; vice-presidents, Messrs. W. E. Lilly and J. O. Moynan; members of Council, Messrs. F. Bergin, M. J. Buckley, J. W. Griffith, J. H. Hargrave, J. T. Jackson, P. H. M'Carthy, P. F. Purcell, W. R. Stephens; and hon. secretary, Mr. A. Hassard.

A MEETING of the Scottish Veterans' Garden City Association was held last week in the offices of the Association, George Street, Edinburgh. The secretary (Councillor J. F. Robertson) reported that committees had been formed in various parts of the country. A financial statement showed that over £6,000 had been subscribed or promised for the Longniddry scheme. Several thousand pounds had also been raised by county committees. Lord Dean of Guild Henry submitted plans of the first section proposed to be erected at Longniddry. He stated that it was intended to proceed meantime only with a part of the scheme. About twenty cottages with shops and workshops were contemplated. It was resolved to advertise for estimates. The Perth branch, which has raised over £3,000, is at present considering the selection of a site.

IN the Chancery Division last week Mr. Justice Sargant delivered judgment in the application of Rowe Bros. & Co., Ltd., Exeter, for the prolongation of the term for which a patent had been granted respecting improvements in the processes for producing lead oxides, largely used in the manufacture of white and red lead. Rowe Bros. are, with Government assistance in providing building materials, erecting a large factory in Lancashire, where their works are situated. The patent was acquired by them after it had been unsuccessfully exploited by other companies owing, it was alleged, to the dumping of cheaper German products. Mr. Justice Sargant said the applicants had embarked large sums of money in the development of the enterprise, but, hampered by low prices and other causes, they had incurred considerable loss over the working of the process. Only recently had they been able to make up some part of the loss. Furthermore, there appeared to be a reasonable prospect of future success. So far as the degree of inventive merit in the process was concerned he failed to see anything exceptional in it. It had but limited scope, being merely an improvement on improvements. If the process proved to be really valuable when worked on a large scale the petitioners would have a start over competitors in the matter of building the new works necessary. He was glad to say that they would not go unremunerated. On the whole, however, the petition fell short of the standard required to justify the prolongation of the patent, and the application would not be granted.

TRADE NOTE.

A VERY damp wall in the Mayor's house at Winchester gave considerable trouble to the Corporation. Many remedies were tried with unsatisfactory results. Ultimately the Chief Sanitary Inspector suggested a Pudloed cement rendering, and we are informed that a permanently dry wall has been obtained.

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THE
Architect and Contract Reporter.
FRIDAY, JUNE 9, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

COMPETITION OPEN.

DUBLIN.—June 15.—The Senate of the National University of Ireland invites designs for a University building. The competition is limited to architects living and practising in Ireland. Applications for conditions, accompanied by £2 2*s.* deposit, which will be returned on receipt of a bona-fide design, are to be made to Sir Joseph McGrath, LL.D., registrar, the National University of Ireland, 49 Merrion Square, Dublin.

CONTRACTS OPEN.

BARROW-IN-FURNESS.—June 12.—For the construction of a sub-station on Walney Island, for the Electricity Committee. Mr. L. Hewlett, town clerk, Barrow-in-Furness.

BEDFORD.—June 28.—For renovation works (chiefly external painting and repairs, &c.) at the various Council schools. Mr. R. Kitching Ellison, surveyor of school buildings, Shire Hall, Bedford.

BRISTOL.—June 17.—For the undermentioned works for the Guardians:—(*a*) Provision and fixing of new dome light at Eastville Institution; (*b*) Painting, distempering, &c., various rooms in female imbeciles' quarters at Stapleton Institution; (*c*) Painting, papering, &c., at Snowdon House, Fishponds. Mr. J. J. Simpson, clerk to the Guardians, St. Peter's Hospital, Bristol.

BRISTOL.—June 21.—For construction of foundations for No. 11 turbo-alternator at the Feeder Road generating station, St. Philip's, for the Electrical Committee. Deposit £2 2*s.* Mr. H. Faraday Proctor, M.I.C.E., M.I.E.E., chief engineer and general manager, Exchange, Corn Street, Bristol.

ERITH.—June 21.—For carrying out an extension at the open-air swimming bath in Walnut Tree Road, and the fixing of eight washing baths and other incidental works, for the Urban District Council. The Surveyor, Council Offices, Erith.

HALIFAX.—June 13.—The Education Committee of the Halifax Corporation invite tenders for (1) painting of sundry schools; (2) maple flooring; (3) pointing walls at Sunnyside Council school; and (4) extension of the heating apparatus at Portland Road Council school. Deposit £1 in each case. Mr. James Lord, M.I.C.E., borough engineer, Town Hall, Halifax.

HALIFAX.—June 17.—For (contract No. 1) supply and erection of steelwork over the dam at the electricity works; (2) and builder's work in connection with same, for the Electricity Committee. Mr. J. Lord, M.I.C.E., borough engineer, Town Hall, Halifax.

HENGRAVE.—June 14.—For the demolition of the existing portions of bridge, the removal of the debris, and the erection of a new structure at Waste Water Bridge, Hengrave, for the West Suffolk County Council, as follows: (Contract No. 1) Construction of abutments, wing walls, &c., in concrete and brickwork; (2) floor constructed of steel trough decking. Deposit £2 2*s.* each contract. Mr. W. L. Jenkins, A.M.I.C.E., county surveyor, Shire Hall, Bury St. Edmunds.

HURDSFIELD.—June 15.—For the improvement of the staircase at the Daybrook Street school. Mr. J. Wright, architect, Macclesfield.

IRELAND.—For erection of two semi-detached villas in the town of Tuam. Mr. J. McDonnell, Tuam.

IRELAND.—June 13.—For erection of a gatekeeper's cottage at Barnhill level crossing, near Lisnaskea, for the Great Northern Railway Company, Ireland. Deposit £1 1*s.* The Engineer's Offices at Dublin and Belfast, and Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

LEEDS.—For the demolition and re-erection of buildings in Hunslet Road, Leeds, for Messrs. Clemens, Marshall & Carbert. Mr. C. Castelow, A.R.I.B.A., Red Hall Chambers, Guildford Street, Leeds.

LONDON.—June 15.—For the execution of ordinary works and repairs to the buildings in their charge in the Potteries district during one year from July 1, for the Commissioners of H.M. Works and Public Buildings. Deposit £1. H.M. Office of Works, &c., Storey's Gate, London, S.W.

OLDBURY.—June 15.—For supply and erection of a roof over the purifiers at the works, for the Urban District Council. Mr. C. H. Carder, engineer and manager, Gasworks, Oldbury.

PENDLETON.—June 13.—For relaying concrete and tile floors at the Hope Infirmary, Pendleton, for the Salford Board of Guardians. Mr. E. H. Inchley, clerk, Poor-Law Offices, Eccles New Road, Salford.

READING.—June 20.—For making alterations and additions to the public sanitary convenience for women in the market passage, and for works in connection therewith to the w.c.'s attached to the corn exchange, for the Corporation. Mr. J. Bowen, A.M.I.C.E., borough engineer and surveyor, Town Hall, Reading.

SCOTLAND.—June 12.—For the carpenter, joiner, ironmongery, and lather works of additions at present being executed at Leith Academy, Leith, for the Leith School Board. Deposit £1. Mr. G. Craig, architect, 85 Duke Street, Leith.

THATCHAM.—June 12.—For constructing and extending concrete walling in the Northfield Road and Stoney Lane, Thatcham, for the Newbury Rural District Council. Mr. W. Church, surveyor, Newtown Road, Newbury.

VARTEG.—June 10.—For repair and renovation of the Wesley Hall and classrooms. Mr. C. H. Badman, Salisbury House, Varteg, Mon.

WALES.—June 10.—For certain alterations and additions to the police station at Littlehaven, for the Pembrokeshire County Council. Mr. A. Thomas, A.R.I.B.A., county surveyor, Haverfordwest.

WALES.—June 13.—For the following works, viz., painting district police stations, painting cab shelters, stripping and reslating main roof of the Cathays police station, for the Cardiff Corporation. The Office of the City Engineer, City Hall, Cardiff.

WILTS.—July 7.—For carrying out works in alterations, additions, repairs, and renovations, &c., at the following Council schools during the summer vacation, 1916, in accordance with plans and specifications prepared by the county surveyor, for the General Education Committee of the Wilts County Council: Atworth, Bromham, Bremhill East Tytherton, Brinkworth, Chippenham Ivy Lane, Chippenham Westmead mixed and infants', Corsham Pickwick, Corsham Methuen, Corsham Neston, Corsham boys' and infants', Downton, Dilton Marsh, Donhead St. Mary, Donhead Ludwell, Edington and East Coulston, Great Cheverill, Highworth mixed and infants', Idmiston, Luckington, Milton Lilbourne, Melksham Lowbourne, Pewsey mixed and infants', Purton, Rodbourne Cheney, Rodbourne Cheney

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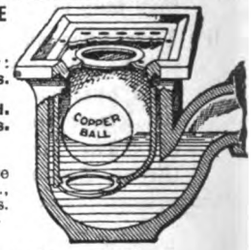
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Also Patent Ball Valve Interceptors for 4-in., 6-in., and 9-in. Drains. Stocked in Earthenware and Iron.

For further particulars apply—

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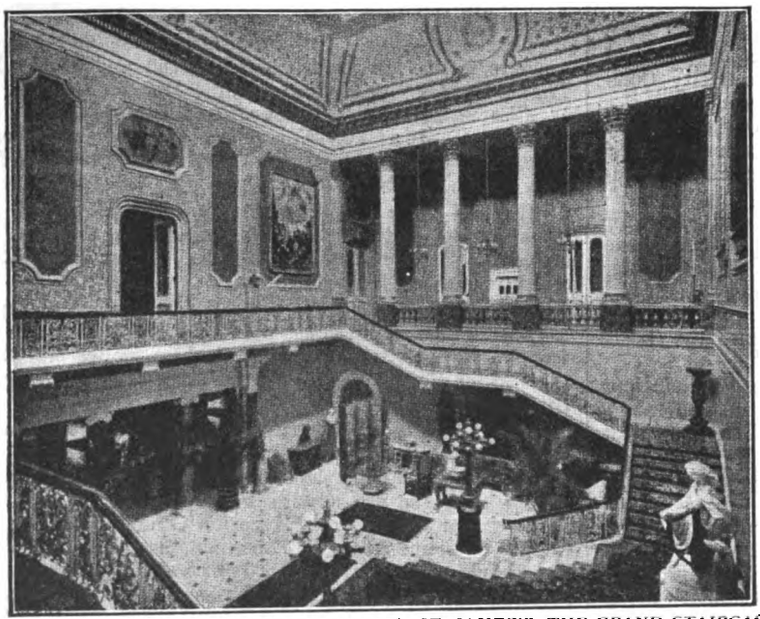
City Road Works, CARDIFF.
Telegrams: "INTERCEPTOR, CARDIFF." Tel. No. 461.

BY SPECIAL APPOINTMENT

Scagliola Marble

TO HIS MAJESTY.

An old Italian process, revived in the early part of the Sixteenth Century by Guido Sassi; is not a surface decoration, but a thoroughly artistic material. It was largely used by the Florentines in some of their most elaborate works, and was introduced into this country by Mr. J. Wyatt about 1750. It has been manufactured by this firm for the last 85 years, and fixed in many of the most important buildings in the Kingdom.



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The whole of the Columns, Pilasters, Wall Lining, and Balustrading are in Scagliola Marble.

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WHICH HAS STOOD
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COLUMNS. PILASTERS.
ARCHITRAVES. WALL LINING.
IRON STANCHIONS SURROUNDED WITHOUT SHOWING JOINT.
THE EFFECT OF THE RAREST MARBLES AT A MODERATE COST.
THE BEST OF MARBLE SUBSTITUTES.

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A form of Scagliola, especially suitable for
WALL LINING, DADOS, SLABS, and FLAT WORK generally.
Equally effective and durable at MUCH LOWER COST.

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Haydon, Ramsbury, Ramsbury Axford, Stratton St. Margaret, Upper and Lower Stratton boys' and girls' and infants', Shalbourne Oxenwood, Trowbridge Newtown, Trowbridge Adcroft boys' and girls', and Margaret Stancomb, Wanborough, Wroughton girls' and infants,' Wootton Bassett, Westwood with Ilford, West Dean and Warminster Close Council schools. Mr. J. G. Powell, county surveyor, Trowbridge.

WELLINGTON.—June 15.—For alterations and building work to the main building, children's home, probationary wards, &c., of the Union premises. Messrs. Fleeming, Hickman & Fleeming, architects, Market Square, Wellington, Salop.

TENDERS.

COVENTRY.

For erection of a coal storage for the Electric Light Committee.

Amended scheme.

BENNIS & Co. (*accepted*) . . .	£1,575	0	0

IRELAND.

For building a residence, including water supply and sewage works, near Rathcormac, co. Cork, for Mrs. Mary Hatch. Mr. W. F. MAYE, C.E., architect, Fermoy. Quantities by Mr. WILLIAM MAYE.

Bowen	£1,704	0	0
Creedon	1,530	0	0
Kearns & Son	1,548	0	0
J. COFFEY, Midleton (*accepted*) . .	1,500	0	0

VARIETIES.

THE inventory of the heritable and movable estate of the late James Park, builder, Aberdeen, who died on February 14 last, amounts to £18,910 16*s.* 2*d.*, on which £115 4*s.* 6*d.* of estate duty has meantime been paid.

MR. H. S. GAMLEY, A.R.S.A., has had the honour of submitting to Queen Alexandra the model for the bronze portrait bust of King Edward which he is executing for Her Majesty.

THE Rotherham Borough Council's Housing Committee have inspected a site of nine acres of land for the erection of workmen's dwellings near the Aldwarke pumping station. It is recommended that the Town Clerk negotiate with the owner for its acquisition.

MESSRS. JOHN WATSON, LTD., are about to open up a coalfield at Robroyston, and have approached the County Council of Lanark for water and drainage facilities. It is proposed to erect eight foremen's houses, and to proceed with 500 workmen's houses as the colliery develops.

AT Cambridge University last week it was officially reported that the proposed grace relating to the admission of women to the first and second M.B. examinations and the examination in architectural studies has been withdrawn, in order that reports on the subject may be presented to the Senate by the Boards concerned.

THE large church of St. Barnabas, in Pitshanger Lane, Ealing, was consecrated by the Bishop of London on the 3rd inst. Accommodation for 1,000 people is in the nave, which is in Gothic with a strong French feeling. The semi-circular apse has an ambulatory, and there is a Lady chapel. Messrs. E. C. Shearman & A. E. Tyler are the architects, and the building work was executed by Messrs. J. Burges & Son, of Wimbledon.

ONE of the members of the Liverpool United Operative Plumbers and Domestic Engineers' Association was presented with a cheque for £100 last week, being a grant made by the association in all parts of the country, because of injuries received whilst following his employment, which rendered him incapable of ever again working at his trade. This grant is in addition to the compensation received as the outcome of the law case fought by the society, and sickness benefit extending over the period of illness.

THE Manchester Consistory Court was asked by the vicar and churchwardens for a faculty in respect of St. Mary's Church, Eccles. The Earl of Ellesmere proposes to present a chapel in the church. He also proposes to present to the parishioners eighty-five pews in the south gallery and the Brereton tomb in the chapel, the condition being that the parishioners shall keep all in repair. The Chancellor said the faculty would be granted subject to the matters being submitted to the patron of the living, the Lord Chancellor.

MR. EUGENE WASON, M.P., asked, in the House of Commons recently, the Under-Secretary for War whether he could now state whether he had been able to make arrangements with the Admiralty for painters in Cornwall under proper regulations to carry on their out-of-door painting in that county. Mr. Tennant said it was now only necessary for an applicant to obtain the permission of the competent local naval or military authority to whom complete discretion had been delegated in regard to granting permits in suitable cases.

THE Surveyors' Institution wish it to be known that Lieut.-Colonel Cranfield, commanding 3-7th D.C.O. (Middlesex Regiment), is prepared to give members of the institution or their assistants an opportunity of enlisting in that battalion, and, as far as possible, to allow them to serve together in the same platoon. Intending recruits should communicate direct to the headquarters of the battalion at Solefields Camp, Sevenoaks. This is one of the four battalions which we gave last week as being ready to welcome architects as recruits.

FOR many years past our readers must have admired the work, almost exclusively published in "The British Architect," of Mr. Raffles Davison, and we are glad to think that it will still be possible to obtain examples of the work of this able draughtsman. Few men have been gifted as Mr. Raffles Davison in this respect. Our contemporary passes with the issue published at the end of May from a weekly paper to a monthly journal, and we offer to Mr. Raffles Davison, its editor, our sincere wishes for its successful future.

AN exhibition on an important scale of pictures dealing with the war by Italian artists will be held shortly after Whitsuntide at the Leicester Galleries, Leicester Square. Leading artists of Italy are contributing to it, and the exhibition will have an official character by the inclusion of a large collection of paintings of the war on the Italian front by the famous artist, Ludovica Pogliaghi, who has been authorised by the Italian Government to execute the series. Signor Pogliaghi is well known to visitors to Milan as the designer of the magnificent bronze doors of the cathedral.

MR. P. MACGREGOR CHALMERS, I.A., architect, Glasgow, with the authority of the Crown, is conducting search work in the nave of Dunfermline Abbey. The object of the operations is understood to be to ascertain the nature and extent of St. Margaret's Church, which existed prior to the nave, and may have been used for worship while the heavy masonry walls and pillars of the old part of the church were being built in the twelfth century. The odd fragments of standing masonry which have been laid bare point to the existence of a structure of some kind there at a remote date, and the debris suggests that the present floor of the nave had been used as a place of sepulture. An article on this subject by Mr. Macgregor Chalmers appeared in "The Architect" of April 7.

THE St. Anne's-on-Sea Urban Council have completed a marine open-air bath at a cost of about £10,000. The bath and buildings cover an area of 3,200 square yards. The bath itself is 80 yards long by 40 yards wide, and has a capacity of 3,750 tons of water. Along the entire length and for a width of 36 feet the depth of water is 7 feet, and for the remaining 84 feet it gradually becomes shallower to the degree of zero. Electric pumps provide a supply of filtered water, which is delivered into the bath in cascade fashion. There are dressing-rooms and a café, designed with flat roofs which provide spacious balconies and promenades. Mr. F. Harrison is the architect.

THE Liverpool Architectural Society on Saturday last paid a visit of inspection to the North Wales Sanatorium for Consumptives, which is in course of erection as a King Edward VII. memorial. The site is 250 acres of land on an eminence about six miles from Denbigh, and overlooks the beautiful Vale of Clwyd. The buildings, while possessing no particular ornamental features, are specially planned from utilitarian and hygienic points of view. It is expected that the total cost will be about £40,000, which works out at a cost of £168 per bed. There is accommodation for 250 patients, men, women, and children, with a special surgical ward. It is expected that the institution will be ready to receive patients about the beginning of August. Mr. James Merritt, of Birkenhead, is the building contractor, and Messrs. Dargue, Griffiths & Co., of Liverpool, the contractors for the heating and lighting. Mr. T. T. Rees, F.R.I.B.A., F.S.I., of Liverpool, is the architect.

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BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 7079.—May 11, 1915.—Concrete structures. Antoine Dujardin, architect, 81 Kensington Gardens Square, Bayswater, W.; Leon Lootens, contractor, 63 Cavendish Road, Brondesbury, N.W., and August Verraert, engineer, 38 Sunnyside Road, Ealing, W, all formerly domiciled at Ostend, Belgium.—This invention has for its object the building of structures or houses of concrete elements which can readily be transported, and which being connected together by bolts can at once be inhabited. Fig. 1 shows a house in building, and fig. 2 a half sectional plan of a house. Fig. 3 shows a modified house in elevation. Fig. 4 a sectional elevation of the roof and outside wall. Figs. 5 and 6 show details. Referring to figs. 1 and 2, a house or other structure is mainly made up of twin reinforced concrete lengths $a\ a^1$ with a space between the two separate elements and concrete slabs b, whose ends are adapted to lie in part of said spaces, a slab being located between two uprights. An upright $a\ a^1$ is composed of a plurality of lengths placed

Fig. 1.

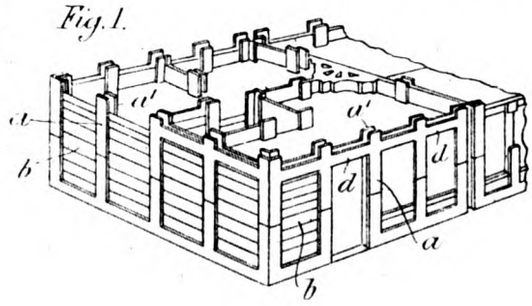
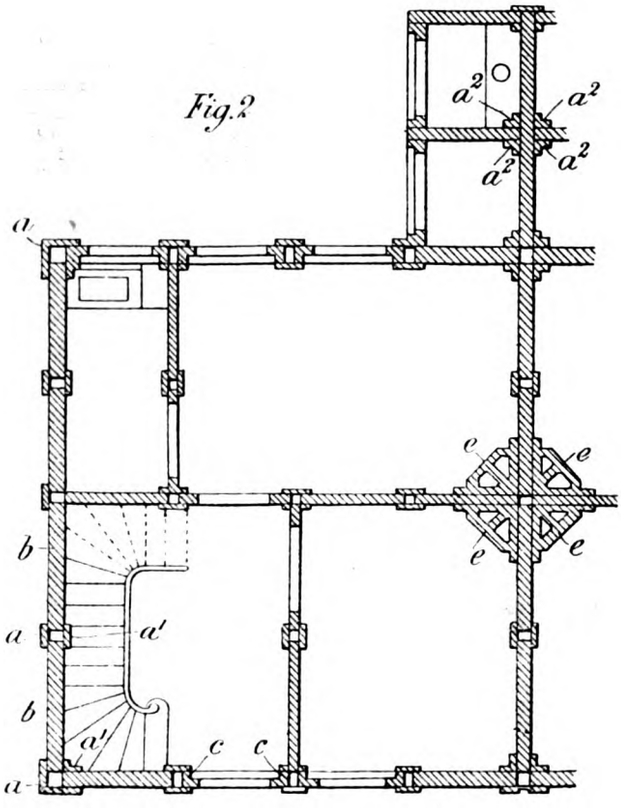
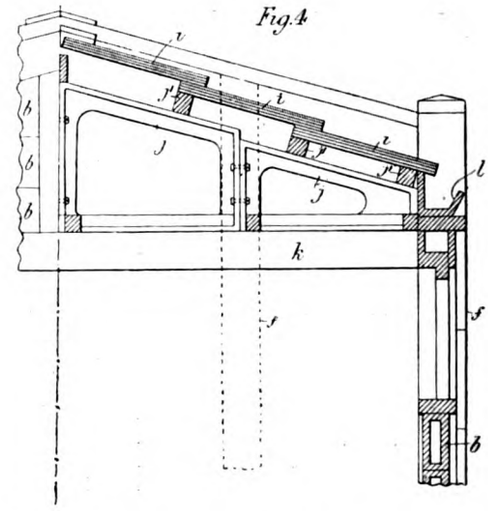


Fig. 2.



one on the other, and of suitable section where they join to make a tight joint. The uprights $a\ a^1$ at the corners are composed of a pair of angle pieces of different sizes formed in lengths. When an upright has also to support an inside wall its elements are grooved for this purpose, or the inside upright may be formed of twin angle pieces as indicated at a^2, fig. 2. As many inside uprights are provided as may be necessary. The window and door frames are composed of angle piece uprights c and cross pieces d (fig. 3). The chimney at a corner is formed of triangular block lengths e, provided with suitable holes and serving as twin uprights. The ground floor may be formed of hollow slabs resting upon the ground itself. The slabs b where resting on each other

Fig. 4.



are of suitable section to make a tight joint as shown in fig. 6, and especially where intended for the outside are made hollow. As indicated the uprights $a\ a^1$ break joint with the slabs b. In figs. 3 and 4 the roof is formed of concrete slabs i, with turned-up edges and arranged as shown in fig. 5, a wedge-shaped piece i^1

Fig. 3.

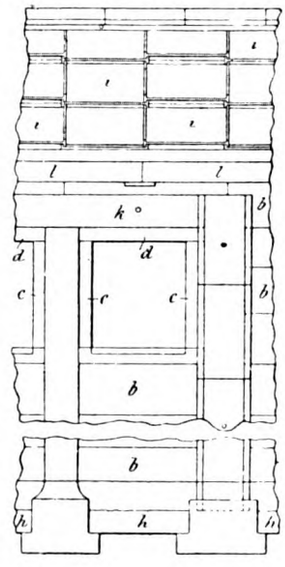


Fig. 5.

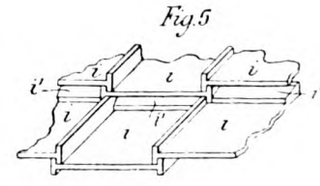
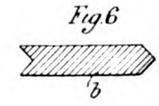


Fig. 6.



being located between an upper slab and a lower slab. The roof is supported by the uprights, which are made of different heights to give the desired slope. j is a framework of concrete elements supported on a beam k. The slabs are bolted to concrete beams j^1 The gutter l is also formed of concrete lengths. The elements forming the house are bolted together at suitable intervals as may be necessary; for example, the twin elements are bolted together as indicated in fig. 3.—May 17, 1916.

THE "Commission du Vieux-Paris" is about to undertake on the suggestion of the Prefect of the Seine a general inventory of all the artistic, historic and archæological monuments in that city at the present moment.

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THE
Architect and Contract Reporter.
FRIDAY, JUNE 16, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

CONTRACTS OPEN.

BEDFORD.—June 28.—For renovation works (chiefly external painting and repairs, &c.) at the various Council schools. Mr. R. Kitching Ellison, surveyor of school buildings, Shire Hall, Bedford.

BRISTOL.—June 17.—For the undermentioned works for the Guardians:—(*a*) Provision and fixing of new dome light at Eastville Institution; (*b*) Painting, distempering, &c., various rooms in female imbeciles' quarters at Stapleton Institution; (*c*) Painting, papering, &c., at Snowdon House, Fishponds. Mr. J. J. Simpson, clerk to the Guardians, St. Peter's Hospital, Bristol.

BRISTOL.—June 21.—For construction of foundations for No. 11 turbo-alternator at the Feeder Road generating station, St. Philip's, for the Electrical Committee. Deposit £2 2*s*. Mr. H. Faraday Proctor, M.I.C.E., M.I.E.E., chief engineer and general manager, Exchange, Corn Street, Bristol.

CARLISLE.—June 27.—For erection of hostel for trainmen at Carlisle, for the North-Eastern Railway. The Goods Agent, N.E. Railway, Carlisle, and Mr. A. Pollard, the company's architect, York.

ERITH.—June 21.—For carrying out an extension at the open-air swimming bath in Walnut Tree Road, and the fixing of eight washing baths and other incidental works, for the Urban District Council. The Surveyor, Council Offices, Erith.

GRIMSBY.—June 19.—For extending the central fire station, near the town hall, for the Fire Engine Committee. Deposit £1 1*s*. Mr. H. G. Whyatt, M.I.C.E., borough engineer and surveyor, Municipal Offices, 170 Victoria Street, Grimsby.

HALIFAX.—June 17.—For (contract No. 1) supply and erection of steelwork over the dam at the electricity works; (2) and builder's work in connection with same, for the Electricity Committee. Mr. J. Lord, M.I.C.E., borough engineer, Town Hall, Halifax.

LONDON.—June 29.—For sundry decorative works and repairs at their infirmary, Marloes Road, Kensington, W., for the Kensington Board of Guardians. Mr. W. R. Stephens, clerk, Guardians' Offices, Marloes Road, Kensington, W.

READING.—June 20.—For making alterations and additions to the public sanitary convenience for women in the market passage, and for works in connection therewith to the w.c.'s attached to the corn exchange, for the Corporation. Mr. J. Bowen, A.M.I.C.E., borough engineer and surveyor, Town Hall, Reading.

SCOTLAND.—June 21.—For plumber work (contract No. 1) of city hall, for the Dundee Town Council. Deposit £1. Mr. J. Thomson, city architect, 91 Commercial Street, Dundee.

SCOTLAND.—June 22.—For the whole or any of the work required in the erection of cottages at Longniddry, for the Scottish Veterans' Garden City Association. Deposit £1. Messrs. Henry & MacLellan, 7 South Charlotte Street, Edinburgh.

SUNDERLAND.—June 29.—For making good considerable damage at the Wheat Sheaf car depôt, for the Corporation. The General Manager, Tramway Offices, Monkwearmouth.

WAKEFIELD.—June 20.—For alterations to the lavatories at the northern end of the market hall. The Sanitary Inspector's Office, Town Hall, Wakefield.

WELLINGBOROUGH.—June 19.—For immediate erection of a temporary pavilion at the isolation hospital, Finedon Road, for the Urban District Council. Mr. R. S. Henshaw, engineer and surveyor, Council Offices, Market Square, Wellingborough.

WIGAN.—June 20.—For erection and completion of extension to boiler house, which will be a steel-framed building encased in brickwork, including (contract No. 1) concrete foundations, brickwork, joinery, plumbing, slating, &c.; and (2) steel construction work, for the Electricity Committee. Deposit £1 1*s*. Mr. A. T. Gooseman, borough engineer, Wigan.

TENDERS.

HYTHE.

For the construction of six bastions to sea wall, one flight of steps, four additional timber groynes, and extension of one existing groyne on or adjacent to the foreshore at Hythe, for the Corporation. Messrs. DOUGLASS, LEWIS & DOUGLASS, consulting engineers, 15 Victoria Street, Westminster, London, S.W.

WALLIS & SONS, Maidstone (*accepted*) .	£2,987 0 0

IRELAND.

For the erection of schools in Navan, for the Christian Brothers De La Salle.

P. SHERIDAN, Newbridge, co. Kildare (*accepted*)	£3.549 0 0

Seven other tenders were received.

LONDON.

For cleaning and painting at the offices in Savoy Court, for the Metropolitan Water Board.

Macey & Sons	£280 0 0
Stiles & Son	198 0 0
Maple & Co.	164 0 0
RICE & SONS (*accepted*)	149 0 0

PLYMOUTH.

For the general decorations and furnishing of the mayor's parlour and reception room.

MAPLE & CO., LTD. (*accepted*) . .	£794 10 0

SUNNINGHILL.

For structural alterations to their cottage at Blacknest, Sunninghill, Berks., for the Windsor Rural District Council.

F. Pizzey & Son	£72 10 0
W. WATSON, Ascot (*accepted*) . . .	66 0 0

THE Mayor of Carnarvon announced on the occasion of his election that one of his objects during his year of office would be to endeavour to get possession for the public of the old walls of the town. The Mayor is now in a position to state that a substantial beginning has been made. A daughter of the late Sir John Puleston, at one time Constable of Carnarvon Castle, has kindly presented what is known as Puleston Tower and a portion of the adjoining wall. This will be handed over to the Commissioners of Ancient Monuments for restoration, and it is understood that it will receive immediate attention. The remaining towers as well as the intervening lengths of wall continue in the hands of private owners, but the Mayor hopes that the example will soon be followed by others.

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Works: HAREFIELD, MIDDLESEX.

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Poilite Standard Tiles FOR DIAGONAL FIXING.
Poilite Asbestos Cement Building Sheets (4′ × 4′, 6′ × 4′, 8′ × 4′. From $\frac{1}{16}$″ thick, upwards).
Compressed Sheets (4′ × 4′. Smooth on Both Sides).

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L.C.C. TABARD STREET HOUSING SCHEME.

THE Housing of the Working Classes Committee reported at the last meeting of the London County Council that compensation has now been finally assessed in all the disputed claims in respect of property required for the Tabard Street, Southwark, &c., scheme, and terms of purchase have been arranged in all the remaining cases. They have, therefore, revised their estimate of the gross cost of the scheme, and find that it will be possible to make a large reduction in the original estimate approved by the Council. Particulars are given in the following statement:

Total number of hereditaments included in the scheme	875
Total number of claims dealt with	151
Original estimate of cost of acquiring property, including costs and incidental expenses	£439,000
Total amount claimed, exclusive of the informal claim (£500,000), referred to hereafter	£372,493
Total amount of settlements and awards ...	£201,362
Revised estimate of total cost of acquisition	£225,000

So far as can be foreseen at present the figure of £225,000 in respect of the acquisition of property is not likely to be exceeded, but sundry minor claims will have to be met from time to time. The estimate of £473,300 approved on November 8, 1910, includes a sum of £34,300 in respect of the cost of roads, &c., and the laying out of the open space on the Tabard Street area, and this figure owing to altered conditions may have to be revised. In all the circumstances they propose the reduction of the approved estimate by £200,000.

The following comparison is made of the estimated cost of this scheme, as revised, with the cost of the next largest scheme carried out by the Council, namely, the Boundary Street, Bethnal Green, scheme, and also with the general average cost of all the clearance schemes carried out by the Council and the Metropolitan Board of Works:—

Scheme.	Area dealt with.	Cost per acre.
All schemes excluding Tabard Street, &c., scheme ...	92.5 acres	£34,350
Boundary Street scheme ...	14.8 ,,	£23,800
Tabard Street, &c., scheme ...	18.5 ,,	£14,000

It will be observed that the cost per acre of the Tabard Street, &c., scheme will be rather less than three-fifths of the cost of the Boundary Street scheme, and only about two-fifths of the average cost per acre of all the other schemes.

Various causes have contributed to the very favourable result with which the Council has reason to be gratified. The value of property of the class dealt with has much depreciated in recent years, and this has occurred to a greater extent than was foreseen when the original estimate was prepared, and other circumstances have been favourable to successful negotiation. The result of the arbitration in the disputed cases was also satisfactory, the total of the awards in respect of thirteen claims amounting to £10,774 11*s.*, or little more than £350 in excess of the total of the sums offered by the Council, while the total amount claimed in these cases was £32,263. Another important factor in the result is the settlement of two large claims which included substantial sums in respect of trade interests. Terms having been arranged by agreement in both these cases, one claim, amounting to £59,466, was settled by payment of a sum of £16,500 and the conveyance of a small area of land, while the other claim, for which a figure of no less than £500,000 was informally mentioned by the claimants, was settled on a reinstatement basis involving a payment by the Council of £578 15*s.* only for expenses. A saving was also effected by excluding St. Stephen's Vicarage from the scheme.

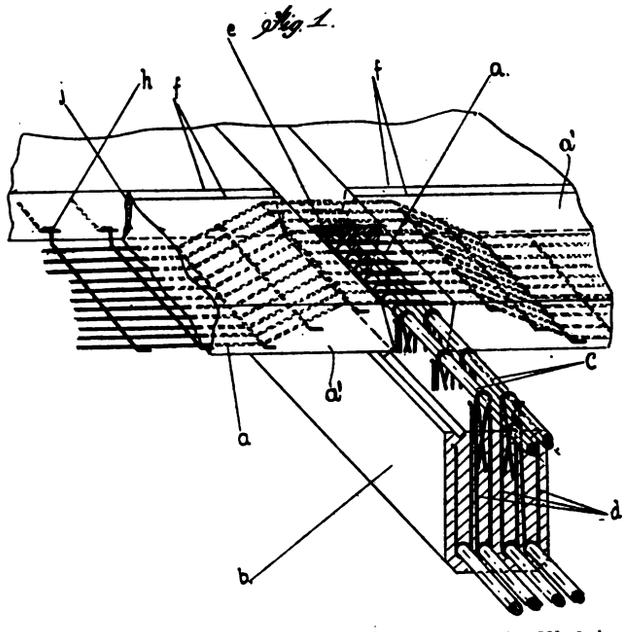
The actual expenditure on the purchase of property will probably fall short of the original estimate by nearly 50 per cent., but the difference, though large, is fully explained. The amount to be paid in respect of trade compensation is always an element of uncertainty, and in this scheme circumstances in connection with the claims for trade interests have proved to be particularly favourable for the Council. The Committee recommended that the estimate (No. 6742) of £473,300 approved on November 8, 1910, in respect of the cost of carrying into effect the Tabard Street, Grotto Place, and Crosby Row scheme, be reduced to £273,300.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

10,849. May 2, 1914.—A method of jointing as applied to the construction of reinforced concrete floors, walls, roofs, partitions, divisions, and all similar structures.—R. J. W. Parsons, of Hele, Manor Park Crescent, Edgware, Middlesex.—This invention relates to a method of jointing as applied to the construction of reinforced concrete floors, walls, roofs, partitions, divisions, tanks, and other structures, and refers to a particular method of jointing by which the finished structure is rendered far stronger and more rigid than has been the case with the usual methods of jointing. In forming a joint two independent reinforced concrete constructional units are provided with portions of the metal reinforcements projecting therefrom, and the said units are placed adjacent to one another with a space between them into which the reinforcements project, the said space being located with respect to another independent constructional unit also provided with projecting reinforcements that such reinforcements project into the said space. The reinforcements of the first-mentioned two members are then connected with those of the other member so as to pro-



duce a mechanical joint, after which the space is filled in containing the interconnected parts with concrete filling material or the like. It will be understood that the intermediate member may be first placed in position, after which the other two members which are to be mechanically connected thereto are suitably placed in position, or in some cases the latter members may first be placed in position, after which the intermediate member is placed in the correct relative position according to the nature of the work to which the joint is to be applied. Referring to the method of forming a joint illustrated at fig. 1, which figure is a perspective view partly in section of a floor or roof, *b* shows a beam the upper portions of the shear reinforcements of which are exposed. These upper portions carry bars *c* destined to form compression reinforcing bars; a^1 are the slabs which are preferably formed as shown with slight angles at the ends and rest upon the upper face of the beam *b*. The slab reinforcement bars *a* of the slabs a^1 are allowed to project, and when the slabs are in position are bent round to engage with the reinforcement bars c. Concrete filling *e* is then rammed in and levelled off so as to

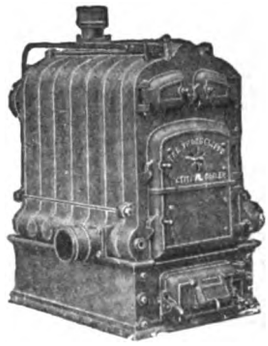
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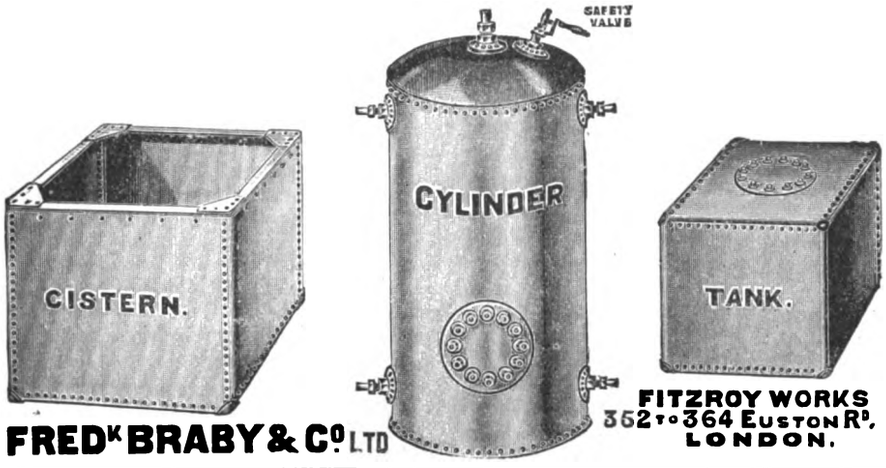
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be flush with the upper surface of the floor or slab. By the method just described a joint is formed between the slabs a^1 and the beam b, and it will be observed that great strength is obtained owing to the manner in which the reinforced members are interconnected. In the same figure the method of interconnecting the edges of the slabs a^1 with one another is illustrated. It will be seen that the side edges f are formed with a slight angle or bevel, and with the cross reinforcement bars h projecting. The ends of these bars on adjacent slabs are bent across each other so as to engage when the slabs are placed in position on the beams

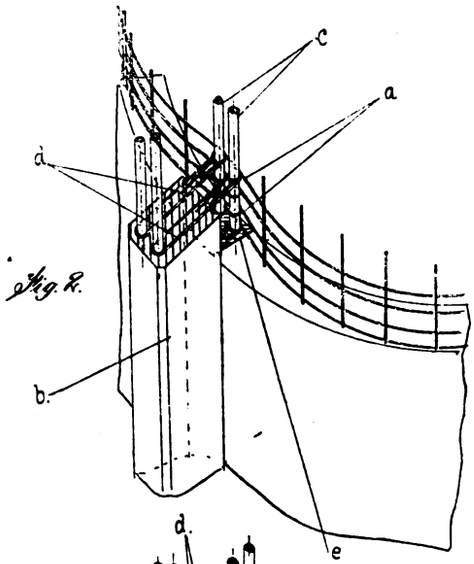


Fig 2.

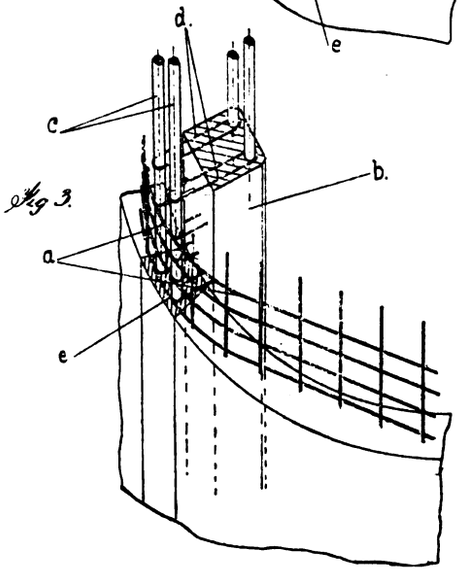


Fig 3.

b. Concrete filling j is then rammed in and levelled off with the surface of the floor or other structure. Figs. 2 and 3 show the application of the invention to constructions such as chimneys, tanks, silos, and reservoirs, where curved vertically disposed slabs are to be united. In these cases the reinforcements d of the columns b carry the vertical reinforcing bars c, which extend down through the space coming between the ends of the slabs. The reinforcing members a of the slabs are bent around and engage the reinforcing members c, the filling e being subsequently rammed or filled in position. In the construction shown at fig. 2 the column b comes upon the outer side of the curve, while in the construction shown at fig. 3 the column comes on the inside of the curve. May 17, 1916.

MR. ERNEST WILLMOTT, F.R.I.B.A., died at his residence in Great Missenden, Bucks, on the 12th inst., in his forty-sixth year.

MR. ALAN BINNING, A.R.I.B.A., Sergeant 2/14 London Regiment (London Scottish), was married on Friday last, June 9, to Miss Beatrice Mary Mumford, of Kirby Lodge, Blackheath.

DURING the making of the foundations for the new Council school at Wetherby, Yorks, an ancient stone was found. It is of ecclesiastical design, of the Decorated period of architecture, from 1300 A.D. to 1370 A.D. At some time it has evidently been used as part of the decorative work above the door or window of a church or abbey.

VARIETIES.

EXTENSIVE alterations and additions at a cost of £100,000 are to be made to the Central Station of the Yorkshire Electric Power Company at Ravensthorpe.

A NEW factory, at a cost of it is estimated over £100,000, is being erected in Whitehall, Leeds. Mr. George W. Atkinson, 1 Mark Lane, Leeds, is the architect.

A NEW solid silver altar cross, designed by Mr. Tapper, F.R.I.B.A., the Minster architect, has been presented to York Minster.

A NEW company has just been formed for the manufacture of geysers and fittings entitled the Winterflood Geyser Company, 35 New Broad Street, E.C.

UNDER the direction of a prominent member of the Antiquarian Society of Scotland extensive excavations are now being conducted at the underground dwellings recently discovered at Kilkenneth, in the island of Tiree.

CONSIDERABLE damage by an outbreak of fire took place at the premises of Messrs. B. Young & Co., glue size makers, of Dunlop Place, Spa Road, Bermondsey, S.E., on Sunday afternoon last.

THE partnership between E. P. Archer & F. M. Stoneham, architects and surveyors, 32 Nicholas Lane, E.C., under the style of Messrs. Meakin, Archer & Stoneham, has been dissolved.

MR. BANISTER F. FLETCHER, F.R.I.B.A., F.S.I., &c., is to be presented with his portrait in oils—for which the commission has been given to Mr. Seymour Lucas, R.A.—as a souvenir of his being for two successive years chairman of the City of London Schools Committee.

THE Estates Committee of the Birmingham City Council has decided, following the decision of the King's Bench Division last March, that the income tax on ground rents should be deducted out of the rent due next after the payment of the tax to the authorities.

MR. WATKIN JONES, one of the oldest business men of Bangor, died at his residence on Sunday, at the age of seventy-four years. Mr. Jones was a builder and contractor, and had a contract in connection with the Menai Suspension Bridge, and had also executed several important Government and public contracts in the district.

THE marriage arranged between Lieut. Eric E. Temple, C.E., A.R.I.B.A., A.R.A.I.C., Canadian Engineers, and of the Chief Architect's Branch of the Dominion Government, Ottawa, elder son of the late Herbert Temple and of Mrs. Temple, Upper Norwood, and Miss Alice Dorothy Shea Thomas, will take place in New York some time in July.

THE Hostel for Women Students at Armstrong College, Newcastle-on-Tyne, was formally opened last week. The design for the building submitted in competition by Messrs. Newcombe & Newcombe was selected, on the recommendation of Mr. Brierley, the assessor, and the buildings have been carried out from Messrs. Newcombe's plans and under their supervision. The cost of the present buildings was about £7,300, but the south wing has, in the meantime, been left over until the additional accommodation is required. The constructional work was executed by Messrs. Middlemiss Bros.

THE Public Works Loan Board have declined to lend to the Sheffield Corporation the amount required to be borrowed for the erection of 261 permanent houses at High Wincobank (intended for occupation by munition workers) at 4½ per cent., as originally agreed with the Board, but have intimated that the rate of interest will be 5 per cent. The Treasury has agreed to a corresponding increase in the contribution to be made by the Ministry of Munitions. Sanction has been received by the Corporation for the borrowing of £137,104, for the purchase of additional plant at Neepsend Power Station.

THE will of the late Mr. William Leiper, R.S.A., F.R.I.B.A., architect, Helensburgh, has been lodged in the Register House, Edinburgh, under date March 1913. He bequeaths to the National Gallery of Scotland the portrait of his mother by William M'Taggart, R.S.A., and the oil-painted portrait by Thomas Conture (French artist). There is also a bequest to the Royal Scottish Academy of the sum of £500 to be applied for such purposes in connection with the Academy as should be thought fit.

THE Birmingham Town Planning Committee having completed their tentative proposals for planning the South Birmingham area, give notice that the draft map showing these proposals can be inspected by any owner of land in the area, or representative of any such owner, at the Town

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Planning Department, Council House, on any week day in June and July. The Committee will be prepared to consider any suggestions made to them following upon an inspection of their proposals.

WE regret to announce the death of Mr. W. V. Collett, an etcher whose work was not so widely known as its merits justified. Mr. Collett was less restricted in choice of subject than many of his fellow etchers. Although his plates include such architectural presentments as Gloucester, Hereford, and Worcester Cathedrals, he was equally proficient in dealing with figure pieces. In our issue of July 23, 1909, we reproduced his "Interior of Church of St. Agnes, Liverpool" (the late Mr. J. L. Pearson, R.A., architect), which is considered to be a very worthy example of his skill.

THE Selsey Parish Magazine contains the following: "As a result of the reference to the old Selsey Church band in last month's magazine, we have again been fortunate enough to secure another flute. This flute, or fife, formerly belonged to Joseph Smith, and was played by him in the old Selsey Church band in the middle of the last century. Mr. Smith was a man of varied musical attainments, for he sometimes played the bassoon or violin as well as the flute. His violin was used by him for about fifty years, and it then passed into the possession of his stepson, Mr. Thomas Pryer, now of Chichester, who wrote his name and the date when he obtained the instrument—1850—in the inside of the fiddle. Mr. Pryer, who still possesses the violin, also owned the flute, and he has recently presented it to the Rector to be preserved in the glass case in the church."

THE National Art-Collections Fund held its annual meeting on the 9th inst. at the Society of Antiquaries' Rooms, Burlington House, W. The hon. secretary (Mr. Robert C. Witt), in presenting the report, said the decline in membership was very small. The most important acquisition they had secured for the nation during the past year was the marvellous Chinese painting, "The Lady and the Bear." Those who had seen it in the British Museum would appreciate what a masterpiece it was. A national loan collection of pictures was in course of formation, thanks to the public spirit of Mr. William Harvey, of Leeds, the object being to form a nucleus of good pictures of all schools not only for circulation on loan to provincial galleries, but also to the Dominions and Colonies. This was only the beginning of a very far-reaching scheme.

MR. PAUL WATERHOUSE, M.A., Vice-President R.I.B.A., is the architect for the new chemical laboratory in South Parks Road, Oxford, opened last week, of which a reproduction from the Royal Academy drawing appeared in our issue of December 4, 1914. An interesting note in the "Manchester Guardian" says that Mr. Waterhouse has placed the following Latin chronogram on the building:—

BALLIoLENSIs
FECI
HYDRATECVs
o sI
MELIVs,

which means: "I, Waterhouse of Balliol, built it; would that I had built it better." The numeral letters add up to the date 1914. This inscription, according to the same journal, is claimed to be in specially close adherence to the stricter rule of the chronogram as practised on the Continent and especially in the Low Countries. In such a composition no numeral letters should occur which are superfluous, and, as far as possible, no words should be employed which are without numeral letters.

THE report of the Housing Committee of Newcastle Corporation, submitted to a meeting of the City Council on the 7th inst., refers to the expenditure on the Walker housing scheme. The report states that, owing to the inability of the builders to guarantee erection within the period stipulated by the Ministry of Munitions as a condition of the Exchequer grant-in-aid for the erection of 336 dwellings approved by the Council on December 6, it has not been possible to proceed with the scheme, and the Local Government Board therefore propose to cancel the sanctions issued for borrowing £63,299. Expenditure amounting to £1,018 14*s.* 9*d.* has been incurred for architect's and quantity surveyor's fees, tenants' compensation and expenses in connection not only with the above proposal, but also with the scheme for development of 16½ acres referred back for further consideration on December 2, and the larger scheme for the development of 28½ acres approved by the Council in May 1915.

THE death of Professor Silvanus Thompson, D.Sc., LL.D., F.R.S., for thirty years Principal of the City and Guilds Technical College, Finsbury, will come as a personal loss to many thousands of people. Of his brilliance as a man of science, and especially in those branches of it which were concerned with electricity, this is not the place to speak. He enjoyed as such an international reputation, and was not unhonoured even in his own country. His work was pre-eminently of a practical character, and he always held in view the practical application of his study. As Principal of the Finsbury Technical College since 1885 he wielded an ever-widening influence. As President of the Illuminating Engineering Society he recently proved himself conversant with those problems of lighting which confront architects; in 1914 he had initiated a discussion as to the lighting of museums and picture galleries. One of his chief recreations being water-colour sketching he was directly interested in that subject. Professor Thompson was blest with a very considerable personal charm which sprang out of his unassuming manner rather than out of his profound knowledge or his clear mode of expression.

THE hostels for women students which are being erected at East Craigmillar Park, Newington, Edinburgh, the site of the Craigmillar Golf Club, will probably be occupied in the autumn. At present three hostels, forming part of a larger scheme, are being erected, and they have an excellent open site of twenty acres. Each hostel will contain fifty students, and each student is provided with a study bedroom heated by an open fireplace, while for general use the hostels contain a large recreation room and a large study, which can be converted into one hall when desired. There is a large dining-room, to which is attached a servery and kitchen equipped with an efficient and up-to-date installation for cooking by coal and steam. A number of small apartments fitted with sinks, electric irons, kettles, &c., are provided on the bedroom floors. Small piano practising rooms are provided in an isolated part of the building, while in addition to a suite of rooms for the warden, each hostel will contain limited accommodation for visitors, and a sick room. Electric lighting has been adopted throughout, while the heating by open fireplaces has been augmented in the larger rooms, corridors, &c., by a small hot-water heating system. To reduce labour as far as possible all brass or plated metal work has been avoided throughout, while electric service lifts have been provided to raise coal, luggage, &c., to the various floors, the distribution upon which will be by means of trolleys. Architecturally the buildings have been treated in a simple and pleasing phase of domestic design. The grounds are being laid out to contain a number of hockey pitches and ash tennis courts. The total cost of the portion of the scheme being proceeded with now, including the cost of the site, will approach £60,000. The architect is Mr. A. K. Robertson, of Robertson & Swan, A.R.I.B.A., 29 Hanover Street, Edinburgh.

ARRANGEMENTS have been made, with the approval of the Foreign Office, for extending to British prisoners of war interned abroad the benefits of the scheme, which has been in operation for the last year in connection with Ruhleben, for supplying selected books of an educational character to those of the interned who may be desirous of continuing their studies in any subject. Under this scheme several thousands of carefully selected volumes, mostly standard works, have been supplied to the Ruhleben Camp, which is now provided with excellent libraries (class, reference, and lending). These books, which have been sent out through the agency of officers of the Board of Education, have proved a great boon to the interned, and have enabled sustained educational work of a definite character to be carried on by the Camp Education Department formed among the prisoners. In view of the value of the work the Board of Trade (Marine Department) have decided to take it into account in connection with their examinations for the certificates of competency granted by them to officers of the Mercantile Marine and the Fishing Service. Accordingly, arrangements have now been completed for recording the time spent by any prisoner interned at Ruhleben or Groningen in the study of nautical or other subjects. An appeal is, therefore, now made for a plentiful supply of new or secondhand books of an educational character (light literature and fiction is available from other sources) to meet the needs of the many thousands of British prisoners interned in enemy or neutral countries. It is to be hoped that to this appeal there may be a liberal response. A circular explanatory of the educational book scheme can be obtained by sending a postcard addressed at the Board of Education, Whitehall, S.W., to Mr. A. T Davies, who is in charge of the arrangements.

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THE
Architect and Contract Reporter.
FRIDAY, JUNE 23, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

CONTRACTS OPEN.

BOLLINGTON.—June 26.—For the provision and fixing of roof shutters and for repairs to the retort house roof, for the Gas Committee. The Gas Manager, Bollington.

BLACKBURN.—June 26.—For construction of a concrete storage tank at Sunny Bower, for the Corporation. The Borough Engineer's Office, Blackburn.

BRISTOL.—For erecting workmen's dwellings and laying sewers at Bryant's Hill, St. George, for the Trustees of the Furber Fund. Mr. W. H. Watkins, F.R.I.B.A., architect, 15 Clare Street, Bristol.

CANNOCK.—June 30.—For repairs to and painting of the interior and exterior of the Council offices and other buildings. Mr. R. Blanchard, engineer and surveyor, Council Offices, Cannock.

CARLISLE.—June 27.—For erection of hostel for trainmen at Carlisle, for the North-Eastern Railway. The Goods Agent, N.E. Railway, Carlisle, and Mr. A. Pollard, the company's architect, York.

HARWICH.—July 10.—For the design and construction of a refuse destructor, for the Corporation. Deposit £1 1*s*. Mr. F. H. French, borough surveyor, Harwich.

HEADCORN.—June 30.—For taking down and rebuilding Frank's Bridge, Headcorn, for the Kent County Council. Deposit £2 2*s*. Mr. H. T. Chapman, county surveyor, St. Peter Street, Maidstone, by June 30.

IRELAND.—For certain repairs to Derryald Dispensary Buildings, for the Lurgan Board of Guardians. Mr. J. Calvert, clerk, Workhouse, Lurgan.

IRELAND.—For erection of a labourer's house, building walls, and doing other work at Maddybennyn, for Dr. W. K. Law. Mr. S. J. M'Fadden, C.E., Queen Street, Coleraine.

LONDON.—June 29.—For sundry decorative works and repairs at their infirmary, Marloes Road, Kensington, W., for the Kensington Board of Guardians. Mr. W. R. Stephens, clerk, Guardians' Offices, Marloes Road, Kensington, W.

POOLE.—June 26.—For repairs, painting, &c., at school buildings as follows, for the Corporation—viz.: Lagland Street school; South Road school; cookery centre, Mount Street; Oakdale school; Branksome Heath school; and Heatherlands school. The Borough Surveyor's Office, Poole.

ROCHESTER.—June 28.—For erection of a slaughter hall, cooling room, lairage and pens, &c., upon the Common, Rochester, for Messrs. Payne & Co. Apply by June 28 to Mr. C. W. Thompson, A.R.I.B.A., P.A.S.I., architect, Bank Chambers, Rochester.

SCOTLAND.—June 27.—For the carpenter and slater works of re-roofing stable and barn at Redcraigs, Craighill, Bridge of Dee, for Mr. J. Monro. The Farm or Mr. R. Rae, Balmedie.

SCOTLAND.—June 27.—For painter, joiner, slater, mason, plumber and smith works for the various schools of the Greenock School Board. The Clerk of the Board, Greenock.

SCOTLAND.—June 27.—For the mason, carpenter, and slater works of restoration of part of steading at Mains of Tertowie, Kinellar, for Mr. W. W. Allan. The Farm or Mr. R. Rae, Balmedie.

SCOTLAND.—June 28.—For formation of a concrete roof over the tank chamber at the Corporation Baths, Infirmary Street, Edinburgh. Mr. J. A. Williamson, A.R.I.B.A., Public Works Office, City Chambers, Edinburgh.

SCOTLAND.—June 30.—For mason, joiner, slater, and plaster work at Auchinclech Farm, Skene. Mr. Cassie, tenant, the Farm, Skene.

SUNDERLAND.—June 29.—For making good considerable damage at the Wheat Sheaf car depôt, for the Corporation. The General Manager, Tramway Offices, Monkwearmouth.

WALES.—June 27.—For erecting motor garage, also painting and polishing work at the Co-operative Stores, Troedyrhiw, for the Merthyr, Troedyrhiw and District Co-operative Society, Ltd. Mr. T. E. Rees, M.S.A., architect, Merthyr Tydfil.

WILTS.—July 7.—For carrying out works in alterations, additions, repairs, and renovations, &c., at the following Council schools during the summer vacation, 1916, in accordance with plans and specifications prepared by the county surveyor, for the General Education Committee of the Wilts County Council: Atworth, Bromham, Bremhill East Tytherton, Brinkworth, Chippenham Ivy Lane, Chippenham Westmead mixed and infants', Corsham Pickwick, Corsham Methuen, Corsham Neston. Corsham boys' and infants', Downton, Dilton Marsh, Donhead St. Mary, Donhead Ludwell, Edington and East Coulston, Great Cheverill, Highworth mixed and infants', Idmiston, Luckington, Milton Lilbourne, Melksham Lowbourne, Pewsey mixed and infants', Purton, Rodbourne Cheney, Rodbourne Cheney Haydon, Ramsbury, Ramsbury Axford, Stratton St. Margaret, Upper and Lower Stratton boys' and girls' and infants', Shalbourne Oxenwood, Trowbridge Newtown, Trowbridge Adcroft boys' and girls', and Margaret Stancomb, Wanborough, Wroughton girls' and infants,' Wootton Bassett, Westwood with Ilford, West Dean and Warminster Close Council schools. Mr. J. G. Powell, county surveyor, Trowbridge.

TENDERS.

WELLINGTON.

For alterations and building work to the main building, children's home, probationary wards, &c., at the union premises, for the Guardians. Messrs. Fleeming, Hickman & Fleeming, architects, Market Square, Wellington, Salop.

Willcock & Co.	£1,145 0 0
Hayes & Co.	1,030 0 0
Roe	980 0 0
R. & J. Millington	975 0 0
Pace	945 11 0
Carver	933 0 0
J. ROPER, Wellington (*accepted*)	930 0 0

IN Rugby School Chapel a memorial of Rupert Brooke is to be set up. The memorial will consist of a portrait medallion in marble, which will be the work of Professor J. Havard Thomas, and of a panel, on which the sonnet "If I should die" will be carved by Mr. Eric Gill.

CLYDEBANK Dean of Guild Court has passed plans for a block of twenty tenements for shipyard workers. The block will consist of 160 one room and kitchen and two room and kitchen houses, and will be situated in Dumbarton Road. Within the past eighteen months 470 new houses have been completed in Clydebank, while 110 are being erected.

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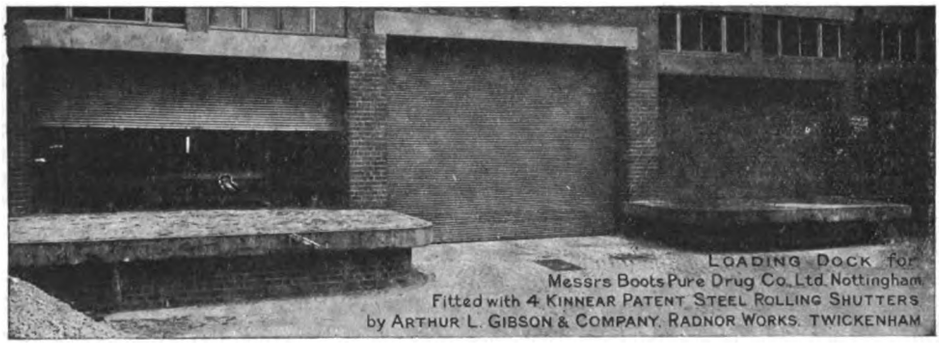

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GLASS WARE AND ILLUMINATION.*

By S. B. LANGLANDS (Inspector of Lighting to the Corporation of Glasgow).

MY object in these introductory remarks is to show the wide scope for study in relation to glassware for illuminating purposes, and to discuss a few of the problems that come within the scope of the Illuminating Engineering Society. At the present stage it is hardly possible to give much definite information as to what is being done. In the past, as is well known, we have been dependent to a very large extent on imported glassware. With the outbreak of war we came to realise more fully our dependent position, and steps are already being taken to improve our facilities in this respect. We are thus in a transition position. What I would like especially to bring home is that glass manufacture is essentially an industry which demands scientific treatment, and that the problems involved can only be effectually solved by co-operation between those interested in all the various uses of glassware for lighting.

I do not propose to enter deeply into the wider industrial problems, such as the attitude of the trades unions, the protection of home industries, &c., which are acutely illustrated in the glass industry. For the moment our duty is to study the scientific and technical aspects.

Being a material for the direction of rays of light, glass is naturally of interest to illuminating engineers who are concerned with the practical applications of light. Some of the members of the Society are interested in the design and use of optical instruments, and most of them come in contact with optical problems in which glass plays an important part. Last year a meeting of the Society was devoted to the discussion of searchlights, and in the past there have been discussions of globes and reflectors and of photometric instruments in which lenses and mirrors are used. The question of most immediate interest to us, however, is the use of glass in natural and artificial lighting.

For natural illumination the manufacture of prismatic glass for distributing the light in more or less obstructed interiors is of interest; even the manufacture of ordinary window glass, serving for the admission of daylight, has its problems. For artificial lighting we have the manufacture of electric lamp-bulbs, chimneys for gas and oil lamps, and globes and reflectors for all illuminants.

At the outbreak of war there were great inconveniences in this latter branch, particularly in respect of the so called "heat-resisting" glassware. Much of the glass of this kind was made at Jena, and manufacturers in this country have already undertaken the production of glassware for use with high-pressure and other lamps, in which a considerable amount of heat is developed. Glassware for globes and chimneys has to fulfil a number of requirements. It must be (*a*) suitably transparent, (*b*) colourless, (*c*) capable of withstanding heat, and (*d*) must be durable and must retain its transparency in use.

Some years ago I made rigid practical tests of different varieties of glass for a certain burner, with the following results:—

(*a*) A German glass.—First for durability, but bad for fogging.

(*b*) A German glass.—Second for durability, and better as regards fogging.

(*c*) Jena glass.—Third for durability but no fogging.

(*d*) British glass.—Fourth for durability, unequal in composition; sometimes fogged and sometimes did not.

(*e*) American glass.—Fifth for durability. No fogging.

I mention this test because it showed a weakness in the British glass, lack of uniformity which is essentially a defect that implies want of scientific supervision. The remarkable success of the Jena works,* State-aided in their infancy, is doubtless due largely to the consistency of the material supplied, the ability to manufacture a glass with given chemical and physical properties again and again. Fogging is ascribed to the presence of lead in the glass. Jena glass contains no lead. It is a fact that since the war began a number of British glass works have undertaken the manufacture of improved glass in this respect. But if this progress is to continue it is essential that the qualities and composition of glass should become standardised on scientific lines, thus forming a groundwork on which we can build for the future.

In addition to the question of standardisation of material, there seems an opening for standardisation in regard to dimensions of glass implements.

Those who have had to do with the lighting of large numbers of buildings know how inconvenient and unnecessary are the great diversities in the size of lamp-bulbs, chimneys, globes, &c. As one who has to do both with gas and electric lighting on a large scale—Glasgow is, perhaps, the biggest lighting authority in the kingdom—I have often been struck by this fact, and I would suggest that this Society, representing so many sections of the lighting industry, is in a particularly happy position to tackle the problem. Standardisation in this respect would not only simplify greatly the manufacture of glassware for lighting purposes, but would also prove a convenience to consumers. If possible the variety of sizes of glassware should be diminished, and a definite series of units in ascending units agreed upon. The sizes selected for globes would naturally depend to a great extent on the candle-power of the lamps for which they are intended. In the case of globes for softening and diminishing the light the size would depend on the limitation of temperature and the maintenance of the intrinsic brilliancy of the unit within a convenient value. Probably it would also be affected by æsthetic considerations as the size of a unit should presumably bear some relation to the size of the interior in which it is used.

Another point on which information would be of interest is the success with which makers in this country have undertaken the production of pressed glass globes in the larger sizes. I understand that the Holophane prismatic glassware was established in this country previous to the war, but it is common knowledge that many of the large white glass units of a decorative kind were imported from abroad, and it is surely up to us to produce good work of this kind in this country.

The question of standardisation of material applies also to hemispheres and globes of a diffusing kind. It is well known that the qualities of white glass differ very much. In some cases, flashed opal for example, uniform illumination over the entire surface is readily obtained and the filament or mantle is entirely obscured; in other cases, pot opal for example, one can still see the source through the glass and the diffusion is not so good. It is therefore of interest, from the lighting standpoint, to specify exactly the quality of the glass so as to secure the requisite uniformity of diffusion, combined with minimum absorption.

Similarly, the colour and permanence of such glasses need to be specified. One finds that some varieties of so-called white glass are apt to become tinged with yellow, and that sometimes an uneven density is produced. Such defects will not be found in the finest glassware. Again, in the case of the larger units the *weight* of the glass is not without significance. In view of the tendency towards the production of sources of high candle-power, this element may have an appreciable effect on the question of fixture-design.

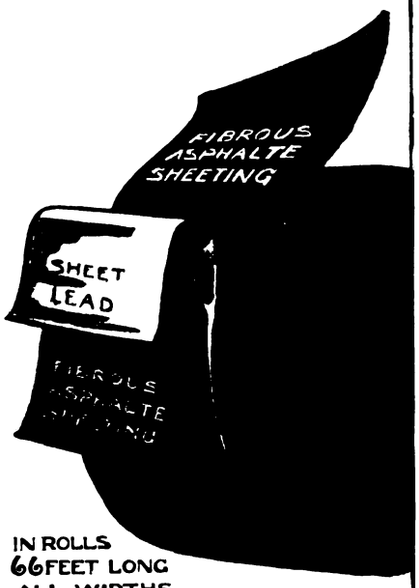
The need for standard dimensions is equally important

* Introduction to a discussion on "Some Aspects of the Design and Use of Glass Ware in Relation to Natural and Artificial Illumination" at a meeting of the Illuminating Engineering Society held at the House of the Royal Society of Arts, 18 John Street, Adelphi, London, W.

* I would refer those interested to the work by Hovestadt on "Jena Glass: Scientific and Industrial Application." Translated by J. D. and A. Everett.

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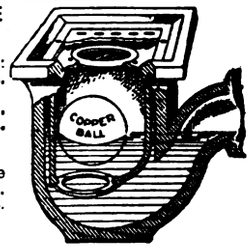
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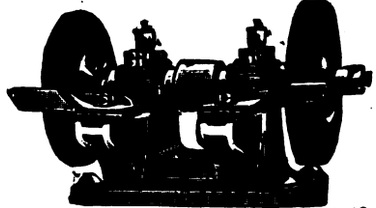
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in the case of reflectors. It is particularly important to check, as far as possible, the tendency on the part of the public to use lamps with reflectors for which they are totally unsuited. Many of the existing reflectors designed originally for carbon filament lamps, for example, are quite unsuited to the metal filament lamps and still more the "half-watt" lamps.

Another matter requiring the supervision of the Illuminating Engineering Society is the testing of the absorption of glasses and of globes and reflectors composed of various kinds of glass. One finds that there are great differences of opinion regarding the amount of light absorbed by different kinds of glassware, and the uncertainty on this point is intensified by the fact that it is possible to get two varieties of glass which appear very similar to the eye but differ widely in respect of absorption. This again is particularly true of white glass, the constitution of which is conveniently analysed under the microscope. In this way differences in quality may be revealed which would escape the naked eye, and differences in diffusing power may be explained.

In regard to reflectors the "reflecting power" is still further complicated by the differences in the percentage of the total light-flux enclosed by the reflector. Obviously a very shallow reflector, which only intercepts a very small portion of the rays of light, would have an apparently high reflecting power; but, nevertheless, it might entirely fail to comply with the requirements of a good reflector as regards screening the light source from the eye and promoting the proper distribution of light. It would appear, therefore, that when mentioning the amount of light reflected by a unit, some statement as to the percentage of the light flux enclosed is also called for.

Tests of the absorbing power of globes and reflectors immediately introduce photometric problems, and call for the services of the illuminating engineer. The preparation of a series of samples of typical glass accompanied by data as regards composition, colour, and absorbing power would be of great value. In regard to fancy coloured shades, the testing of colour is of some importance, and even more so in the case of coloured glasses manufactured for certain specific purposes (e.g., for signal glasses). Accurate tests of such glass require the use of the spectrophotometer, and there are other means, which have been discussed before the Society, of studying such problems. It appears, however, that there is a need for some very simple form of colour-analysing apparatus, and the Society, which has done so much to simplify measurements of the intensity of illumination, might also devote its efforts towards the production of simple instruments for colour-analysis.

Such investigations are also of importance in studying the want of permanence in the colour of glasses and the explanation of fading.

An allied problem for the Society to consider is the production of glasses excluding rays of light which are deleterious for certain classes of work. There has been much discussion of recent years regarding the influence of the ultra-violet rays on eyesight. Whatever be their influence in this respect, it seems to be well established that such rays have a considerable effect in causing the fading of colours of pictures and fabrics. I believe that a glass has been produced in this country capable of absorbing such rays, and therefore suitable for use in glass cases intended to contain coloured objects for exhibition. This point is of special interest to lighting engineers because of the discussion which has taken place regarding the effect of artificial light on coloured materials. There seems good ground for thinking that, however artificial illuminants may differ in this respect, the majority of illuminants, as used for ordinary purposes of illumination, are much less likely to cause fading than prolonged exposure to daylight. But in special cases it might be desirable to include lamps in globes made of a variety of glass which checks the ultra-violet rays, but allows the visible rays to pass unimpeded.

Yet another interesting problem is the production of tinted glass for use with artificial illuminants to produce "artificial daylight." Bulbs for incandescent electric lamps have recently been made of such material, and screens for use with incandescent gaslight have also been developed. The problem is of considerable interest to industries where correct colour-matching is essential, and it would be very desirable to have glass for this purpose accurately analysed and specified for different types of lamps.

Finally, there are many problems that arise in connection with the making of optical instruments which are also of importance in photometry; and conversely there are many optical problems in which convenient methods of measuring light are of great assistance. Experts on photometry could often furnish a hint to those engaged in optical problems. One question which has doubtless often forced itself before the notice of photometric workers is the production of neutral glass of standard absorbing power. There has been no difficulty in obtaining from abroad neutral glass plates transmitting exactly 10 per cent. of the light; but it has hitherto been a very difficult matter to get similar glass in this country.

The advance in Germany in this respect, as well as in many other special lines of optical research, can be traced to the evolution of the Jena works. In the first instance, the scientific work undertaken at Jena was not directly remunerative. But the Government had the foresight to see that it had great future possibilities, and that the ability to manufacture accurate standard glass for all sorts of purposes would create a need for it. History has proved the correctness of this view. On the research work at Jena many subsidiary optical industries have been built up. Similarly, the fine glass works in Austria have been slowly developed through many years of scientific research.

Since the war broke out many manufacturers in this country have made praiseworthy efforts to fill the gap, and in many cases substantial progress has been made. Yet, taken as a whole, such efforts are apt to be unrelated and chaotic. There is a need for the co-ordination of all such individual efforts by some form of central control, and if progress is to be lasting and progressive the industry must be organised on scientific lines. Even so we cannot expect rapid progress, for time will be needed before the influence of scientific study begins to tell.

In particular it is desirable that the scientific sections of the work and the standardisation of material should be guided on some co-ordinated plan. The Institute of Chemistry of Great Britain and Ireland has already done excellent work in devising formulæ for glass required for various purposes. It is to be hoped that for lighting purposes glassware will also be the subject of careful study. In the National Physical Laboratory we have a scientific institution which is already doing good work, and which only requires greater support to be of immense benefit to the glass industry. It has also been suggested that the scheme for a Central Institute on Applied Optics, suggested before the war, should be carried through. In such work the various scientific associations and societies throughout the country should play a part, and there are signs that the Government is willing to consider taking a more active part in fostering the industry. From personal experience I can say that the Board of Trade have already done a good deal considering their present powers. Similarly, I notice that the Board of Education has been considering the establishment of better educational facilities for instruction in glass-blowing and similar processes involved in the manufacture of scientific instruments.

In undertaking such work the authorities will have to consider both the scientific requirements of the industry and the industrial problems which I have briefly mentioned above. The problem is a difficult one, but a highly scientific industry like this is well worth the effort involved, as it reacts on so many other trades and professions.

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In conclusion, I would like to recall for discussion several definite proposals made in the course of this address:—

(1) There is a need for standardisation in respect of materials used in various kinds of glassware used in the lighting industry. It would be very desirable for a complete series of samples to be prepared, attached to each being particulars of the chemical composition, absorbing and diffusing qualities, colour, permanence and durability, and special applications.

(2) An effort should be made to standardise the dimensions of glassware used for lighting purposes, the shapes and sizes of globes and reflectors being limited to a convenient prescribed series.

(3) The conditions of testing the reflecting power and other qualities from a lighting standpoint of globes and reflectors should be more precisely formulated.

(4) An effort should be made to simplify and standardise the apparatus for testing different varieties of glass as regards colour.

(5) The Illuminating Engineering Society should co-operate with other bodies in forming a committee to consider these problems.

NEW CATALOGUES.

"FLOOR SLAB REINFORCEMENT" is the name given to a pamphlet just received which is something more than an illustrated catalogue extolling the merits of the B.R.C. Fabric. The British Reinforced Concrete Engineering Co., Ltd., preface it with a concise exposition as to the primary principles of simplicity in reinforced concrete design, leaving particular problems to be handled with the aid of their special leaflets which give tables for the use of B.R.C. steel wire Fabric in different classes of buildings. Another feature is an account by Mr. Richard Holt, architect, of Liverpool, of some few of the local uses of this system, which include a large school erected from his designs for the Liverpool City Council. Mr. Holt has after some considerable experience arrived at this opinion on B.R.C. Fabric: "I know of no other material which at one and the same time provides the means of strengthening wit[h] in any way tending to weaken the mass of concrete to which it is applied." That Mr. Holt is very far from being alone in his enthusiasm is proved both by the number of public bodies and the variety of purposes to which the Fabric has been put.

This diversity of use is emphasised by the fact that the British Reinforced Concrete Engineering Co. have issue[d] more than one pamphlet under the title of "Road Reinforcement." The latest includes an account by the City Engineer of Chester of how he tackled and successfully met a demand for a road which would work out cheaper than those of ordinary concrete in a part of the city in course of development. Mr. W. Mathew Jones used B.R.C. Fabric, and has come to the conclusion that reinforced concrete carriage-ways have now passed from the experimental stage and have become a certainty. He gives a word of warning as to the absolute necessity of closing such a road to all vehicular traffic for at least three weeks.

Messrs. S. W. Francis & Co., Ltd., 64-70 Gray's Inn Road, W.C., have issued a neat folder, which they call "A Catalogue in Miniature," concerning their rolling shutters. This is instead of their annual catalogue, and is an instance of practical economy. The firm's shutters are doing good war work—such as in sheds for guns and aeroplanes—as well as pursuing their ordinary vocations of closing party wall and other openings, both large and small. It can hardly be necessary to add that Messrs. Francis are shop-fitters with more than half a century of success behind them.

THE Minister of Munitions has appointed Mr. Ernest Newton, A.R.A., President of the Royal Institute of British Architects, in a voluntary capacity to advise the Ministry on various problems arising out of the stoppage of private building operations.

THE Wolverhampton Electricity Committee propose, in view of the great demand for electricity, to make large extensions. Application will be made to the Local Government Board shortly for permission to borrow £34,240. Borrowing powers have already been asked for £19,660.

VARIETIES.

MR. JOHN ASH MARTIN, of West Chapel Street, Mayfair, builder and house decorator, who died on March 16, has left £40,938.

OVER seventy wages movements in connection with the Amalgamated Society of Carpenters and Joiners have been settled in the British Isles this year. Advances range from ½*d.* to 2*d.* an hour.

MR. ERNEST G. THEAKSTON, F.R.I.B.A., announces the removal of his offices from King Street, Cheapside, E.C., to 12 New Court, Carey Street, Lincoln's Inn, London, W.C., and his telephone number as Central 660.

MESSRS. JAMES TURNER & SONS, stone and sand merchants, of Kiveton Park and Worksop, have had plans prepared for a large glass-bottle works which they propose to erect on the west side of Worksop Station of the Great Central Railway.

LOVERS of Adam design will be interested to know that 26 Portland Place is in the hands of Messrs. Knight, Frank & Rutley for disposal, owing to the recent death of Sir James Goodhart. The house was built by the Adam Brothers for the occupation of Robert Adam, and the decorations, which have been carefully preserved, are striking examples of the taste which is now so highly in favour.

THE "Manchester Guardian" states that the late Mr. Alexander, of Kensington, the well-known collector, has left to the Tate Gallery Whistler's two portraits of his daughters. One is the famous "Portrait of Miss Alexander," which ranks among the masterpieces of the last century. These works will be the property of the Misses Alexander during their lives, but they may allow them to be shown at the galleries.

THE Edinburgh Architectural Association are arranging a luncheon in honour of Sir R. Rowand Anderson, LL.D., R.S.A., on the occasion of his being the recipient of the Royal Gold Medal of the Royal Institute of British Architects. The luncheon will take place in the Caledonian Station Hotel, Princes Street, on Thursday, 29th inst., at 1.15 P.M. An address of congratulation will be presented to Sir Rowand Anderson on behalf of the four architectural societies in Scotland by Sir John Burnet, LL.D. The matter is being enthusiastically taken up by the various bodies.

MR. J. E. SANDEMAN, M.Inst.C.E., M.I.Mech.E., has issued his award in the recent arbitration over which he presided, in which Mr. Louis P. Nott, public works contractor, of Bristol, claimed from the Cardiff Corporation a large sum of money for work done and materials supplied in connection with his Llwyn On Reservoir contract. The arbitrator awards the contractor between £12,000 and £13,000. The Cardiff Corporation are to pay all the costs, including the costs of the award and the cost of the printing. The award leaves it open to the Corporation to appeal on certain points of law. Mr. Sandeman accepts the contention of the contractor that there was excessive supervision and unreasonable refusal on the part of the Corporation to allow the contractor to use materials which were in accordance with the contract.

SIR ARTHUR EVANS has issued a general letter to the Press on the subject of commemorative war medals, and more especially pointing out that this country has so far failed to mark our successes on sea or land since the war broke out. As president of the Royal Numismatic Society, he offers as a contribution towards this end, two prizes, to the amount of £100 (which would be proportionately divided), for the best model of a medal to celebrate the great British naval victory off the Horns Reef. The medal or medals would be struck under the auspices of the Royal Numismatic Society, and any profits arising would be devoted to the fund for the Relief of Disabled Seamen. For judging the merits of designs submitted the assistance has been secured of Mr. G. F. Hill, Keeper of the Coin Department in the British Museum, and of Mr. E. E. Maclagan, of the Sculpture Department of the Victoria and Albert Museum. Printed details as to conditions or other information may be obtained from these gentlemen, to whom also designs should be sent. Suggestions as to inscriptions are also invited. Sir Arthur Evans says in conclusion: "It is greatly to be hoped that a standard may thus be set that should help to purge our medallic and monetary art of its present decadent productions, on which surfaces are worn before they are used and even our Gracious Sovereign is rendered bald before his time! The aim in this case at least will be to combine artistic simplicity with boldness of relief and finish and precision in modelling."

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THE
Architect and Contract Reporter.
FRIDAY, JUNE 30, 1916.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than* 2 P.M. *on Thursdays.*

CONTRACTS OPEN.

BIRSTALL.—July 3.—For plumber's work and painter's work for alterations to the new home in Smithies Lane, for the District Nursing Association. Mr. E. Almond, North View, Howden Clough.

CANNOCK.—June 30.—For repairs to and painting of the interior and exterior of the Council offices and other buildings. Mr. R. Blanchard, engineer and surveyor, Council Offices, Cannock.

DEWSBURY.—July 7.—For all or any of the works required in the extension of bakery in Wellington Road, for the Dewsbury Pioneers' Industrial Society, Ltd. Messrs. Holtom & Fox, architects, Corporation Street, Dewsbury.

DEWSBURY.—July 7.—For all or any of the works required in erection of engine and boiler house, long chimney, drying shed, &c., at Westfield Mills, Dewsbury Moor. Messrs. Holtom & Fox, architects, Corporation Street, Dewsbury.

ELLAND.—July 4.—For pulling down derelict property in Church Street, Back Church Street, Southgate, and Old Post Office Yard, for the Urban District Council. Council Offices, Elland, Yorks.

ELLON.—July 4.—For the mason, carpenter, and slater works of alterations to steading, Claymires Croft, Esslemont, Ellon, for Mr. J. Davidson. The Croft, or Mr. R. Rae, Balmedie.

HARWICH.—July 10.—For the design and construction of a refuse destructor, for the Corporation. Deposit £1 1*s*. Mr. F. H. French, borough surveyor, Harwich.

IRELAND.—For extensive alterations and additions to James Fay's drapery premises, Main Street, Cavan, for Mr. Peter Soden. Mr. P. J. Brady, J.P., architect, Broomfield House, Ballyhaise.

IRELAND.—July 17.—For erection of a Masonic Hall at Edenderry, King's Co. Mr. E. Bradbury, F.R.I.A.I., architect, College Park Chambers, Nassau Street, Dublin, or Mr. C. W. H. Manners, Edenderry, King's Co.

LEEDS.—July 3.—For erection of two overground transformer chambers in Holbeck and the construction of an underground transformer chamber in Hunslet, for the Leeds Corporation. Apply to 1 Whitehall Road, Leeds.

LONDON.—July 5.—For the reseating of two Lancashire boilers at the Swaffield Road institution, Wandsworth, S.W., for the Wandsworth Board of Guardians. Mr. F. J. Curtis, clerk, Union Offices, St. John's Hill, Wandsworth, S.W.

SCOTLAND.—July 11.—For the work to be executed in the construction of a boiler house and chimney stalk at Perth Station Hotel, for the Committee of the Perth Station Hotel. Deposit £2 2*s*. The Engineer of the Caledonian Railway, Buchanan Street Station, Glasgow, and the office of the Engineer of the Perth General Station, Perth.

RAUNDS.—July 6.—For laying out proposed cemetery, including the construction of footpaths, erection of entrance gates, boundary fence, drainage, &c., for the Raunds Urban District Council. Mr. J. W. Jones, surveyor, The Square, Raunds, Northants.

SCOTLAND.—June 30.—For mason, joiner, slater, and plaster work at Auchinclech Farm, Skene. Mr. Cassie, tenant, the Farm, Skene.

SCOTLAND.—July 5.—For the builders' work in connection with the extension of the engine room of the Bo'ness electric supply station. Deposit £1 1*s*. The Electricity Works, Bo'ness.

WALES.—June 30.—For erection of the Rupert Hallowes V.C. Ward at the Aberavon and District Hospital. Send in names, not later than the 30th inst., to Mr. F. B. Smith, M.S.A., architect, Port Talbot.

WILTS.—July 7.—For carrying out works in alterations, additions, repairs, and renovations, &c., at the following Council schools during the summer vacation, 1916, in accordance with plans and specifications prepared by the county surveyor, for the General Education Committee of the Wilts County Council: Atworth, Bromham, Bremhill East Tytherton, Brinkworth, Chippenham Ivy Lane, Chippenham Westmead mixed and infants', Corsham Pickwick, Corsham Methuen, Corsham Neston, Corsham boys' and infants', Downton, Dilton Marsh, Donhead St. Mary, Donhead Ludwell, Edington and East Coulston, Great Cheverill, Highworth mixed and infants', Idmiston, Luckington, Milton Lilbourne, Melksham Lowbourne, Pewsey mixed and infants', Purton, Rodbourne Cheney, Rodbourne Cheney Haydon, Ramsbury, Ramsbury Axford, Stratton St. Margaret, Upper and Lower Stratton boys' and girls' and infants', Shalbourne Oxenwood, Trowbridge Newtown, Trowbridge Adcroft boys' and girls', and Margaret Stancomb, Wanborough, Wroughton girls' and infants,' Wootton Bassett, Westwood with Ilford, West Dean and Warminster Close Council schools. Mr. J. G. Powell, county surveyor, Trowbridge.

TENDERS.

GRIMSBY.

For extending the central fire station, near the Town Hall, for the Fire Engine Committee of the Town Council. Mr. H. G. WHYATT, M.I.C.E., borough engineer and surveyor, Grimsby.

Edwards & Raynor	£481 8 3
Waterman	458 0 0
Hipkin	446 12 11
Swaby & Walsham	422 0 0
Hewins & Goodhand	419 17 6
East & Graves	396 18 0
Smith	384 10 0
M. HOLMES & Co., 2 South St. Mary's Gate (*accepted*)	379 10 0

All of Grimsby.

WELLINGBOROUGH.

For the erection of a temporary pavilion at the isolation hospital, Finedon Road, for the Urban District Council. Mr. R. S. HENSHAW, engineer and surveyor, Wellingborough.

Rowell & Co.	£380 0 0
Cowieson & Co.	375 3 3
Humphreys, Ltd.	353 0 0
McManus	349 0 0
Brown & Son	334 18 0
Adams	280 0 0

LORD ABERDEEN has decided to have steps taken to decide the competition for the replanning of Dublin, which had been indefinitely postponed by the Lord-Lieutenant owing to the difficulties arising from the present situation.

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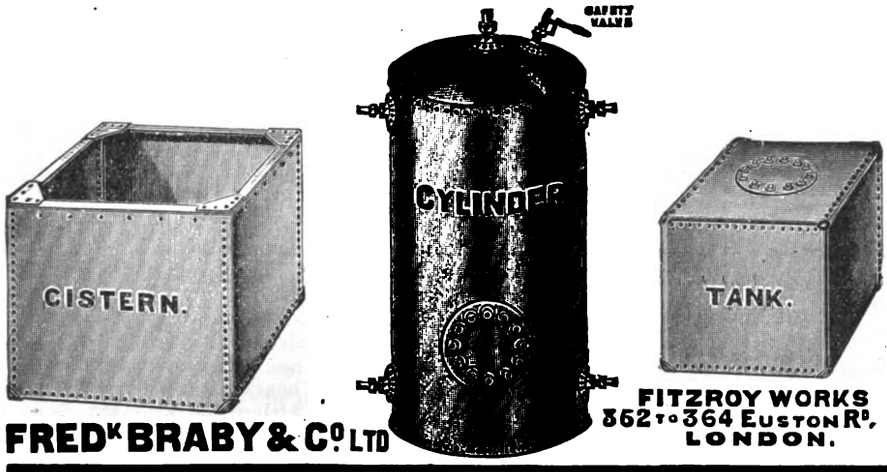
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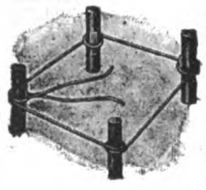
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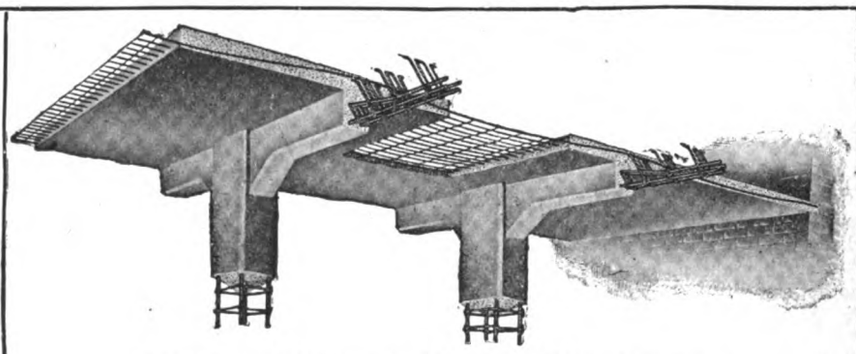
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THE NATIONAL ASSOCIATION OF MASTER PAINTERS.

THE London Association had the honour of entertaining the Council of the National Association of Master Painters and Decorators of England and Wales (Incorporated) on June 6, 1916, in connection with the Quarterly Council Meeting. By the courtesy of the Painter Stainers' Company the meeting was held in the ancient Hall of the Company, Little Trinity Lane, London, E.C.

The President, Councillor James Higson, J.P., occupied the chair.

The following applications for affiliation from local Associations were accepted:—Mansfield, Earlestown and District, Bedford and District, Southport.

The deaths having been reported of Mr. John McIntyre (Irish Association) and Mr. George Bradley (Scarborough), it was resolved:—"That this meeting of the Council of the National Association of Master House Painters of England and Wales desires to record its sense of loss in the deaths of Mr. J. McIntyre, Dublin, and Mr. George Bradley, Scarborough, and to express deep sympathy with their relatives.

It was subsequently reported that Col. R. J. Bennett, of Glasgow, passed away on May 25. Mr. Mawer Cowtan Cowtan, in an eloquent speech, paid tribute to the Colonel's memory, and moved a resolution of condolence. The meeting indicated assent by standing for a few minutes in silence.

The Secretary submitted the report of the Propaganda Committee.

It was reported that since the last Council meeting new Associations have been affiliated in the following towns:—Bedford, Southport, Mansfield, and Earlestown.

Direct members have joined from Mansfield (4), Southsea (1).

It was also reported that at the moment there was a pause in the Committee's work, owing to the pre-occupation of most masters with the urgent matter of the Service Act, but the work would be resumed as opportunity offered, and it was felt that the Propaganda Committee should be a permanent institution.

Mr. Foster submitted the recommendation of an informal meeting of members at the L.C.C. School of Building, that a small committee be appointed to consider the question of the admittance of students of the school to the Apprentices' Competitions, and moved that such a committee should be appointed. Mr. Brook Jackson seconded, and this was carried.

The following gentlemen were appointed:—Messrs. Harris (Plymouth), Barker (Leicester), Milligan (Halifax), Foster (Burnley), Cantrill (Manchester), Peters (Sheffield). Mr. Roberson and Mr. Wilkinson were added to the Committee to represent London.

The President voiced the thanks of the meeting to the Master, Wardens and Livery of the Painter Stainers' Company for the use of their hall.

Mr. Cowtan replied, and moved a vote of thanks to the Chairman, which was carried by acclamation.

An informal meeting between the National and London Propaganda Committees was afterwards held, Mr. Thomas Foster presiding.

STONE PRODUCTION IN CANADA.

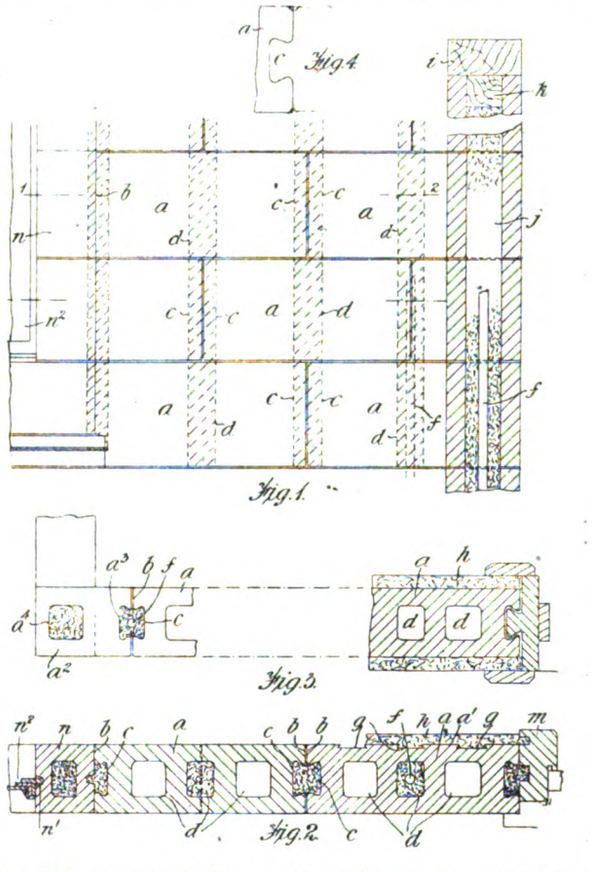
THE stone business in Canada appears to have been instantaneously affected by the European war. The full effect of the conflict on the industry will not be known until the statistics for the past and present are made public. At present, there is available only an analysis of the output for the year 1914 compiled by Mr. John McLeish, chief of the Division of Mineral Resources and Statistics of the Canada Department of Mines. The output of slate for 1914 was valued at only $4,837, by far the smallest amount during the past fifteeen years for which the records are given. As in the United States, the slate industry in Canada is steadily decreasing in volume. The figures for 1914, for instance, should be contrasted with those of ten years ago, when the output was valued at $23,247. There have been no exports of slate since 1896 with the exception of 1908 and 1909, when the amount was very small, while the imports have ranged from $100,000 to over $200,000 per year. The total production of stone in 1914 was $5,469,056, as compared with a value of $5,504,639 in 1913, showing a slight decrease, amounting to $35,583 or less than one per cent. The number of active firms reporting in 1914 was 218, and the total number of men employed was 5,929. Of the total value of the 1914 production, limestone contributed $2,672,781 or 48.9 per cent.; granite, $2,176,602 or 39.8 per cent.; sandstone, $487,140 or 8.9 per cent.; and marble $132,533 or 2.4 per cent. By provinces, Quebec shows the largest output, having a value of 41.8 per cent. of the total, while Ontario takes second place, with a production of 23 per cent. of the total. The exports of stone from Canada in 1914 were valued at $72,080, as against $93,840 in 1913. The total value of the imports of stone during 1914 was $1,252,869, showing a decrease of about 23 per cent. over 1913. During both 1913 and 1914, the imports were derived chiefly from United States and Great Britain, the United States supplying building stone, paving blocks and marble principally, and Great Britain mainly manufactures of granite. Marble is also obtained in some quantity from Italy and other countries.

BRITISH PATENT SPECIFICATION.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the completed specification.

No. 14,267. Oct. 8, 1915.—Construction of Walls and Partitions of Buildings and like Structures.—G. E. Clare, architect, 2 College Road, Harrow, Middlesex.—This invention relating to buildings and like structures is designed more particularly for bungalows, cottages, garages, military



huts, fillings for factory walls between the stanchions thereof, sanatoriums, schools, pavilions, and all kinds of one or more storey buildings. The object of the present invention is to reduce the thickness of the wall or partition

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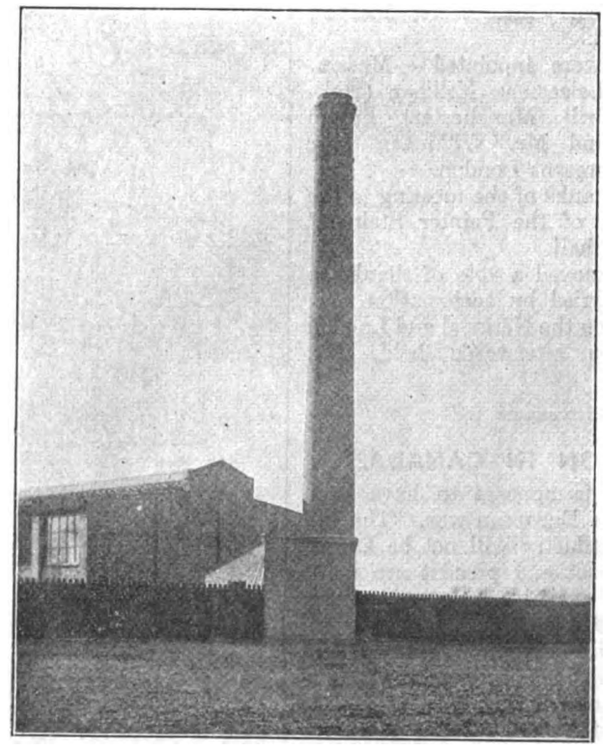
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or the like to the minimum, whilst at the same time adding to its strength by a series of cement dowels, reinforced where necessary by rods or the like, run into dovetail vertical cavities and recesses with rounded-off angles formed in each of the standardised blocks, and also to increase the weatherproof properties by the addition of air cavities formed in the blocks. In this connection the aforesaid recesses form a keyway, and with the cement a key for securing the wooden roof or wall plates, door and window frames, the latter being made of separate standardised blocks, forming cill, head, frame and mullion, of the same material as the walls, and with adjacent recesses for the cement key, oppositely, horizontally, and vertically disposed recesses being provided for the reception of the metal casements. The window sashes would be made of light metal of T or L section fitting and built into the recesses in the window framing. In laying the blocks no skilled labour would be required, said blocks being laid to a line and the connecting ends and horizontal surfaces brushed over with cement grouting, and, when two or more courses are laid, cement grouting would be poured into the recesses, said grouting being mixed with dampproof material or solution, rendering the joint weatherproof. Fig. 1 is an elevation, partly in section, of a wall built in accordance with this invention. Fig. 2 is a sectional plan view taken on line 1-2 of fig. 1. Fig. 3 is a part sectional plan view to show more clearly the angle bonding block. Fig. 4 is an enlarged view illustrative of the dovetail recesses. The standard block a is of rectangular shape, each end b being provided with a vertically disposed dovetail recess c having rounded angles (see fig. 4); also with three vertically disposed cavities d extending the depth of the block, one of such cavities d (the central) serving to receive the cement grouting and wire reinforcement f. These blocks a on their inner faces a^1, as shown in fig. 2, have dovetail recesses g in order to key and hold the plastering h of the wall. The block a^2 for bonding angles (fig. 3) has dovetail vertical grooves a^3, and also with cavity a^4 to form the vertical cement dowel as the courses are laid. In practice, the standard blocks are laid so as to break joint (fig. 1), so that the central or grouting cavity d of a block of a top course registers with the dovetail recesses c of two adjacent blocks a of the course below, the end blocks of each course being shaped and recessed to suit requirements, whilst the wooden roof or wall plates i are secured to the hollows j of the walls by downwardly extending wood dowels k; m and n are respectively the door frame block and the window frame block, the door frame block being keyed, as shown in fig. 2, to the block a, whilst the window frame block n is provided with a vertical recess n^1, into which the metal window sashes n^2 of T or L shape fitting would be built. All dovetail recesses and vertical recesses and vertical cavities are rounded off to facilitate economical manufacture and to prevent damage when being moulded or otherwise formed, or when in transit.—May 31, 1916.

PATENT SPECIFICATIONS.

Selected by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

No. 3,633. March 8, 1915.—F. W. Campbell, 3 Downshire Park, Bangor, Down. Incandescent gas burners.

6,942. May 10, 1915.—Athanasius Giannoussis, 45 Prince Street, Bristol. Trigonometrical measuring instrument.

7,304. May 15, 1915.—George Bourne, Copthorne House, Audlem, Cheshire. Heaters for electric radiators and the like.

7,689. May 22, 1915.—E. L. Cooke, 75 Cartland Road, King's Heath, Birmingham. Deflector or device or apparatus for use in connection with gas and like burners, particularly applicable to the gas burners of cooking stoves.

9,048. June 19, 1915.—W. T. Dean, 12 Carteret Street, Westminster, S.W. Method of artificial illumination.

9,850. July 6, 1915.—O. A. Mygatt, Paris. Shield and reflector for use with artificial light.

10,108. July 12, 1915.—The Stourbridge Glazed Brick and Fireclay Co., Ltd., and F. H. Clark, Holly Hall, Dudley. Flushing cisterns.

13,712. Sept. 27, 1915.—H. C. Jarvis, 552 Yonge Street, Toronto. Wall paper rolls.

11,144. July 31, 1915.—Communicated to the Igranic Electric Co., Ltd., 147 Queen Victoria Street, E.C., by the Cutler-Hammer Manufacturing Co., of Milwaukee, Wisconsin, U.S.A. Electric heaters.

12,372. Aug. 27, 1915.—Richard Farrell, 700 Georgia Street, Vancouver, B.C., and J. F. Harper, 1275 Barclay Street West, Vancouver, British Columbia. Door and like checks.

12,385. Aug. 28, 1915.—G. F. Vaughan, Edmund Vaughan, A. H. Vaughan, and S. P. Bryan, of Standard Works, Willenhall, Staffs. Cylinder latches.

12,738. Sept. 6, 1915.—J. H. Moore, 200 Woodstock Road, Oxford. Accessory for closets of the squat or non-contact type.

15,560. Nov. 4, 1915.—T. D. Galer, 8 Stockwood Crescent, Luton; J. E. Hearn, 29 Chapel Street, Luton; and Brown & Green, Ltd., Phœnix Works, Windsor Street, Luton. Hinges.

16,895. Dec. 1, 1915.—David Morrison, Dantra House, Apollo Bunder, Bombay. Flushing device.

17,986. Dec. 24, 1915.—Donald Fraser, 77 Academy Street, Inverness. Pneumatic tools for stone cutting and the like.

6,683. Nov. 4, 1915.—George Priest, 14 Church Lane, Clayton-le-Moors, Accrington, Lancs. Acetylene generators for lighting, heating, and like purposes.

7,478. May 19, 1915.—C. B. Filkin, 7 George Street, Wolverhampton. Support for rain and like pipes.

10,505. July 20, 1915.—R. A. Kerman, 63 Theobald Road, Canton, Cardiff, sanitary engineer. An appliance for the speedy repair of leak in closed tank cylinder or the like.

7,707. May 22, 1915.—William Calway, 1 Hartingdon Park, Redland, Bristol. Shuttering and parts associated therewith for use in the construction of monolithic concrete and like walls.

7,994. May 29, 1915.—W. G. Tarrant, Lake House, Byfleet, Surrey. Portable house or similar structures.

8,564. June 9, 1915.—S. M. Rutnagur, 27 Medows Street, Bombay. Air-admitting sun-screens for windows, doors, and the like.

14,267. Oct. 8, 1915.—G. E. Clare, architect, 2 College Road, Harrow. Construction of walls and partitions of buildings and like structures.

14,290. Oct. 8, 1915.—A. P. F. Watson, 62 Victoria Street, Christchurch, New Zealand. Fence standard.

17,726. Dec. 18, 1915.—J. K. Shanks, Viewfield Villa, Denny, Stirlingshire. Heating stoves and the like.

18,093. Dec. 28, 1915.—C. S. Bird, Corner Bird Avenue and Washington Street, East Walpole, Norfolk, Mass., U.S.A. Method of heating waterproofing material.

12,386. Aug. 28, 1915.—G. F. Vaughan, A. H. Vaughan, E. Vaughan, and S. P. Bryan, Standard Works, Willenhall, Staffs. Bolts of locks and latches.

100,457. (1,149, Jan. 25, 1916.)—F. M. Barton, 178 West Jackson Boulevard, Chicago, Ill., U.S.A. Flat slab concrete floors, roof constructions, and the like.

100,465. (4,014, Mar. 17, 1916.)—F. W. Brackett and F. W. Brackett & Co., Ltd., Hythe Bridge Ironworks, Colchester. Device for the mechanical purification or straining of water and other liquids.

100,474. (570, Jan. 13, 1916.)—Ebenezer Timmins, A.M.I.M.E., Bridgewater Foundry, Runcorn, Chester. Means or apparatus for indicating liquid levels.

Any of the above specifications may be obtained from J. D. Roots & Co.

OPENINGS FOR BRITISH TRADE.

SINCE the outbreak of the war, applications have been received at the Commercial Intelligence Branch of the Board of Trade from a large number of firms in all parts of the United Kingdom and abroad, who wish to get into communication with United Kingdom manufacturers or producers of various classes of goods which have previously been obtained from Germany and Austria-Hungary.

Applications from firms at home for the names of manufacturers or producers of the following (amongst other) articles have been recorded during the past week:—

Chemicals.—Alum, lump; manganese dioxide, for Leclanché batteries.

Duplicators.—Composition.

Electrical novelties.

Furniture, office, made in steel.

Gelatines, high class, for photographic purposes.

Glassware.—Glass screw cap jars, 1 lb. and ½ lb. capacity.

Lamp burners, cheap, for Indian markets.

Machinery.—Bronzing machines, vacuum hand; for flattening and heading nails; for knitting gas mantles.

Metal plates, enamelled, for domestic use.

Wheels, small, cast metal.

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VARIETIES.

MR. J. REYNOLDS, of Morton, Gainsborough, builder, has left £32,152 (net personalty £1,020).

ALDERMAN CHRISTOPHER ALBERT HAYES, of Salisbury House, Combe Lane, Westbury-on-Trym, builder and contractor, who died on February 16, has left £34,797.

"THE Flight of the Five Members," a large oil painting by Mr. Seymour Lucas, R.A., seen at the Royal Academy last year, has been now fixed in one of the panels in St. Stephen's Hall, Westminster.

MR. A. B. MOUNTAIN, the borough electrical engineer of Huddersfield, has resigned, but he is to be retained as consulting engineer at a salary of £300 a year and expenses. Mr. J. W. Turner, who has been Mr. Mountain's chief assistant, has been appointed electrical engineer at £400 a year.

MR. CHARLES COX, 25 Arlington Road, Eastbourne, builder and contractor, for a long period one of the contractors to the London School Board, left estate valued at £117,611 9*s.* 8*d.*, with net personalty £115,522 9*s.* 4*d.* He made immediate charitable bequests to the total of £20,000, which included £1,000 each to the Builders' Benevolent Institution and the Timber Trade Benevolent Society.

EASTBOURNE Town Council have decided not to acquire for £11,000 seven acres of land opposite the Convalescent Hospital. The acquisition of this site was advocated on the ground that the erection of houses on it would mar the beauty of the front, blot out the view of Beachy Head from part of the front, and prevent the construction of an under-cliff drive.

LONDON building workers of all classes, skilled and unskilled, have been granted an advance of one penny per hour in wages for the period of the war and nine months after. Over 50,000 men are affected by the increase. In the case of all trades with the exception of the carpenters and joiners, the advance will come into force on July 17. The excepted trades will not benefit until July 29.

THE forthcoming exhibition of the Arts and Crafts Exhibition Society in the galleries of the Royal Academy in the autumn will be open to all craftsmen whether members of the society or not, and works will be received and exhibited under conditions similar to those of the summer exhibitions at the Royal Academy. The address of the secretary, Professor E. S. Prior, A.R.A., is 1 Hare Court, Temple, E.C.

AT the recent re-consecration of the newly-restored spire of the parish church of Stanwick, the Bishop of Peterborough remarked that they lived in a county famous for its church spires, and the one in question held an honourable place in the estimation of those who were acquainted with the spires of Northants. Moreover, wherever they were in that county of theirs they never seemed to be out of sight of a church spire pointing to heaven.

GOUROCK Town Council has resolved not to proceed with the consideration of a certain scheme for workmen's dwelling-houses. Plans submitted by the Master of Works of houses at Rosyth, together with an estimate of the cost of erecting similar houses in Gourock, showed that such cost would be about 25 per cent. more than the Rosyth houses, excluding the cost of streets. The Council is of opinion that the annual rentals for such houses would be much greater than the existing rents of superior houses in the burgh.

SIR GEORGE FOSTER, the Canadian Minister of Trade and Commerce, gave a Press representative last week some particulars regarding the new Parliament buildings at Ottawa which are to take the place of those destroyed by fire. The approximate cost is £1,000,000, and it is estimated they will take two years to construct. The walls of the old building, said Sir George, were not injured in any way by the fire, and they will all remain in the reconstructed building. An additional storey will be added, the style of architecture not being changed. The new House of Commons will be erected on the west side of the original buildings, and the new Senate Chamber on the east side, and these will be joined by a central corridor, which will be the distinguishing feature of the new construction when completed.

BEFORE the Glamorgan licensing authority on Monday last, Mr. Vaughan Williams, K.C., and Mr. Lovat Fraser appeared to apply on behalf of Mr. Albert Joseph Solomon for a provisional licence for the construction of a large hydropathic establishment upon the coast in the neighbourhood of Porthcawl. The site, Mr. Vaughan Williams explained, was some 200 yards back from the sea, and was facing Lock's Common. Mr. Vaughan Williams went on to describe the hydro, remarking it was proposed to provide a really good hotel with 110 bedrooms and elaborate bath accommodation, including Turkish baths, &c., and athletic facilities. It would probably be unique on the Welsh coast. In evidence it was stated that the cost would be £50,000. There being no objection to the application it was granted. Mr. S. Williams, of Cardiff, is the architect.

THE Housing Association for Officers' Families are asking for funds to carry through their scheme of erecting a block of flats, to be called Southwood Court, at the Hampstead Garden Suburb immediately the war is over. It will cost about £20,000 for fifty-three flats, £16,000 of which will be a 3½ per cent. investment, and the balance donations to provide additional amenities. More than half has already been raised. Other parts of the country, where living is not expensive and educational facilities are good, will require equal attention, and a committee is being started for a similar scheme near Birmingham, and will, it is hoped, be followed in other parts of the country.

THE recent additions to the Scottish Modern Arts Association's collection of modern Scottish pictures are four in number, viz.: (1) "Winter Sunshine," by Archibald Kay, A.R.S.A. The association were assisted in the purchase of this work by the liberality of a member as an appropriate commemoration of Mr. Archibald Kay's election as an Associate of the R.S.A. (2) A portrait of the artist himself, by Alexander Roche, R.S.A. These two pictures can now be seen in the Royal Scottish Academy's Ninetieth Exhibition. (3 and 4) "The Smile" and "The Question," two portrait studies by the late James Torrance. These last were presented to the association by Mrs. Torrance in response to the Association's desire to possess representative examples of her late husband's work.

THE Architectural Association of Ireland passed the following resolution at a meeting of the committee: "In view of the large amount of impending architectural work in Dublin, the committee of the Architectural Association of Ireland desire to call the attention of architects in practice and assistants to the register, which is kept at the association offices. This register—under the present abnormal conditions—they have decided to throw open, free of charge. Every effort will be made to assist practising architects and assistants at the present juncture." Applications should be addressed to the Hon. Secretaries, the Architectural Association of Ireland, 15 South Frederick Lane, Dublin.

TRADE NOTES.

BOYLE'S latest patent "air-pump" ventilators have been applied to the Ipswich Corporation's Tramway Department, Constantine Road, Ipswich, and to Goldthorpe New Church, Goldthorpe.

THE Ancoats Hospital, Manchester, the Chadderton New Small-pox Hospital, near Oldham, and the Milton Infectious Diseases Hospital, Portsmouth, have recently been supplied with Shorland's double-fronted warm air ventilating patent Manchester hospital stoves by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester. The firm have also supplied their special exhaust ventilators to Messrs. Mitchell's fishing premises, Great Yarmouth; Hendon Rope Works, Sunderland, and a Government shell factory. Shorland's inlet ventilators have been fitted at the Sherburn Picture Hall at Hull and the Picture Palace at Beverley.

IN hospital construction every precaution should be taken to avoid dampness penetrating the brickwork. In the Small-pox Hospital at Ipswich the cavity walls were grouted with waterproofed cement. We also hear that the new medical offices of health at Ipswich were similarly built with Pudloed cement, and the result in both cases has been most satisfactory. Owing to the rainy seasons in most hot climates, as much care is required to guard against dampness as in our islands. At the headquarters of the Commanding Officer at Ballygunj, India, the inner rooms for several years caused annoyance on account of severe dampness. The trouble has now been overcome with a Pudloed cement rendering on the floors and walls. The executive engineer of the Dacca (India) University Division has expressed his satisfaction with the cement damp courses in the new Secretariat and the new Mahommedan College at Dacca, in which Pudlo was used in both structures to waterproof the cement.

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